

FIG. 1A

20240902 26335960

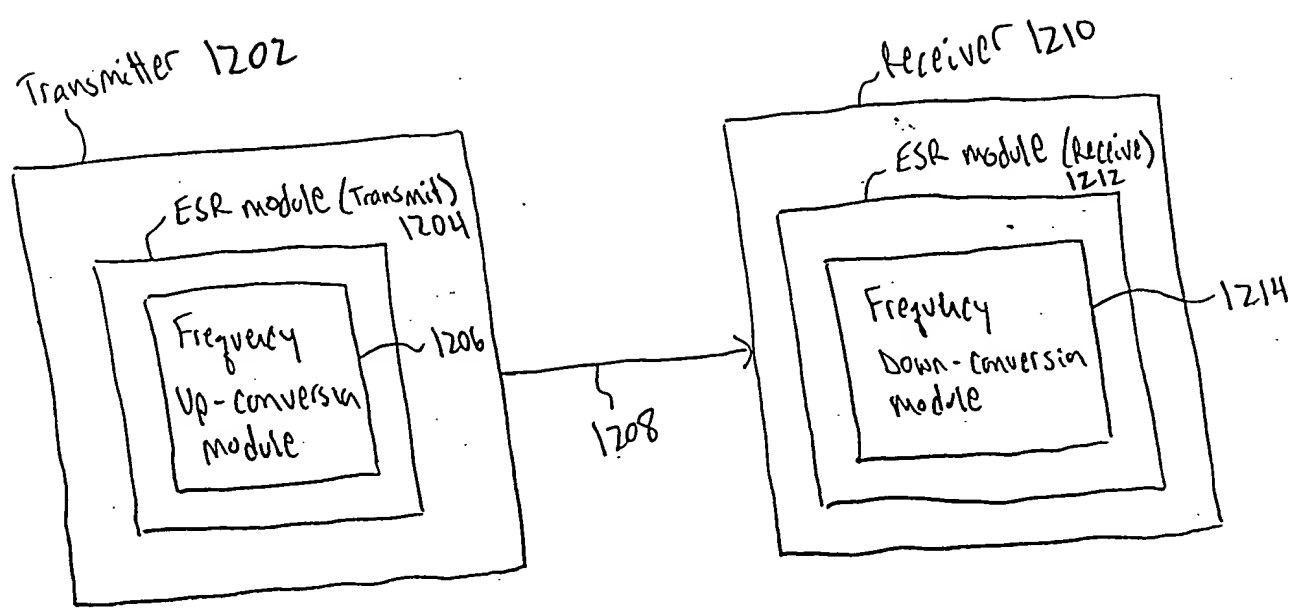


FIG. 12

004080" 6326950

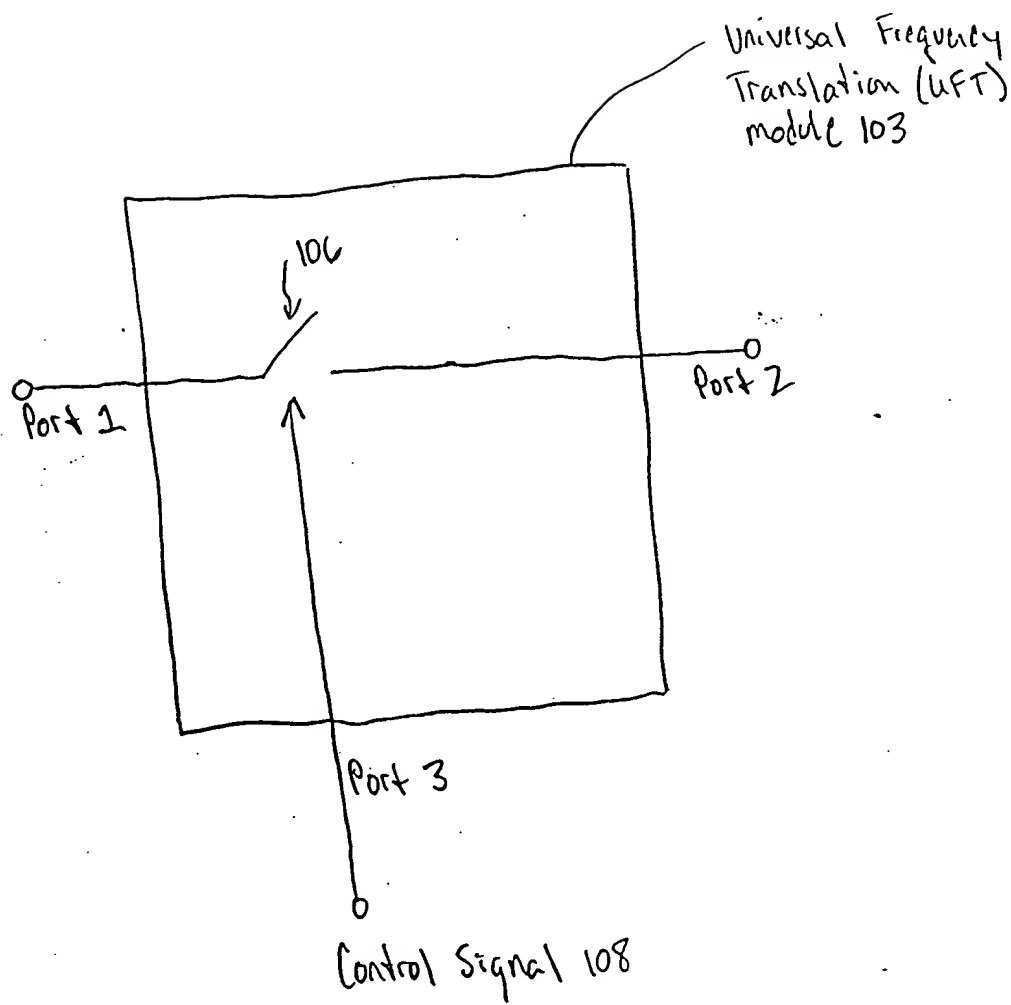


FIG. 1B

004080 / 603060

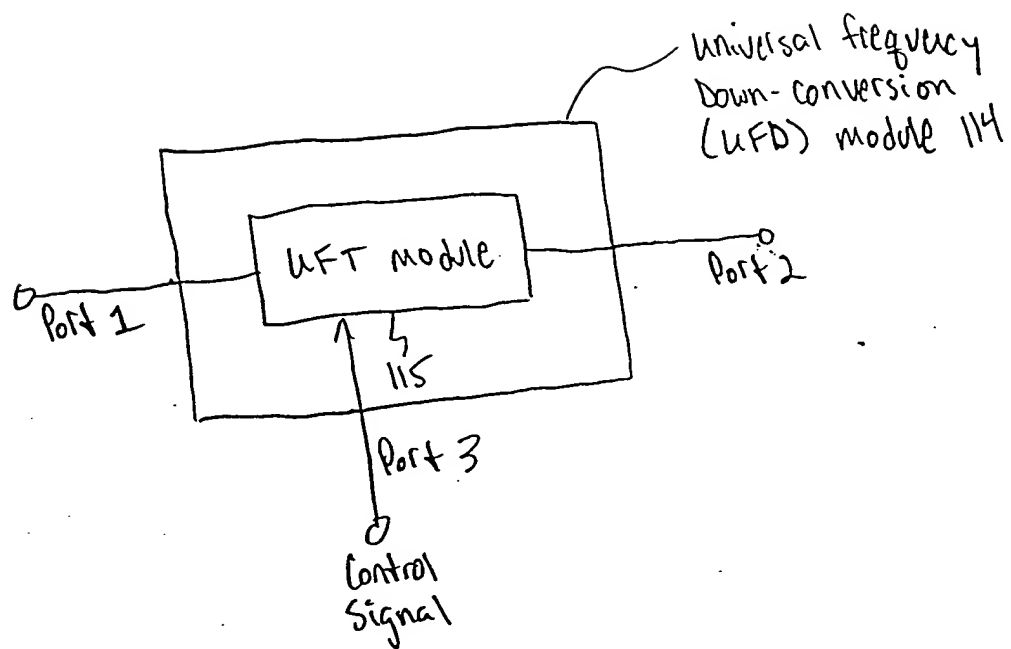


FIG. 1C

004030 25222950

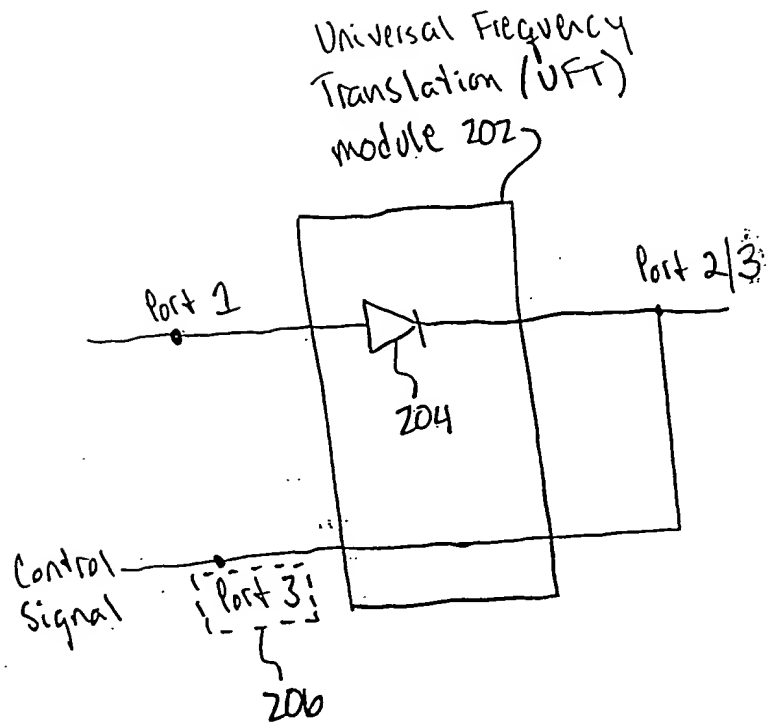


FIG. 2

Universal Frequency
Up-Conversion (UFU) module 300

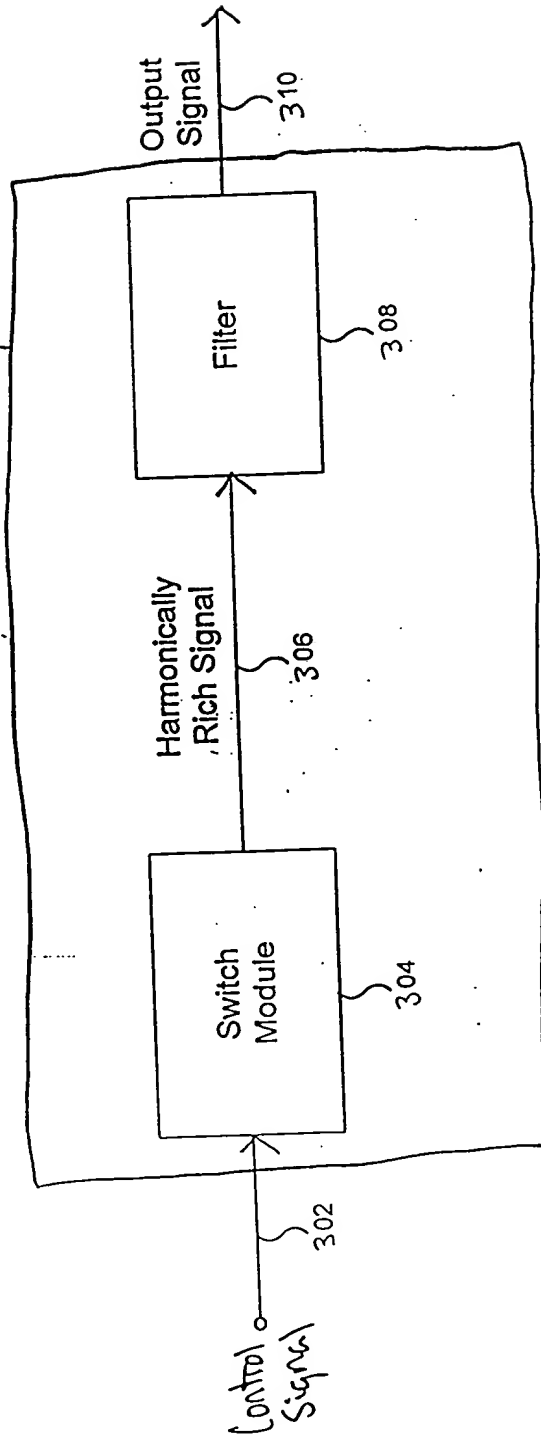


FIG. 3

Universal Frequency
Up-conversion (UFCU) module 401

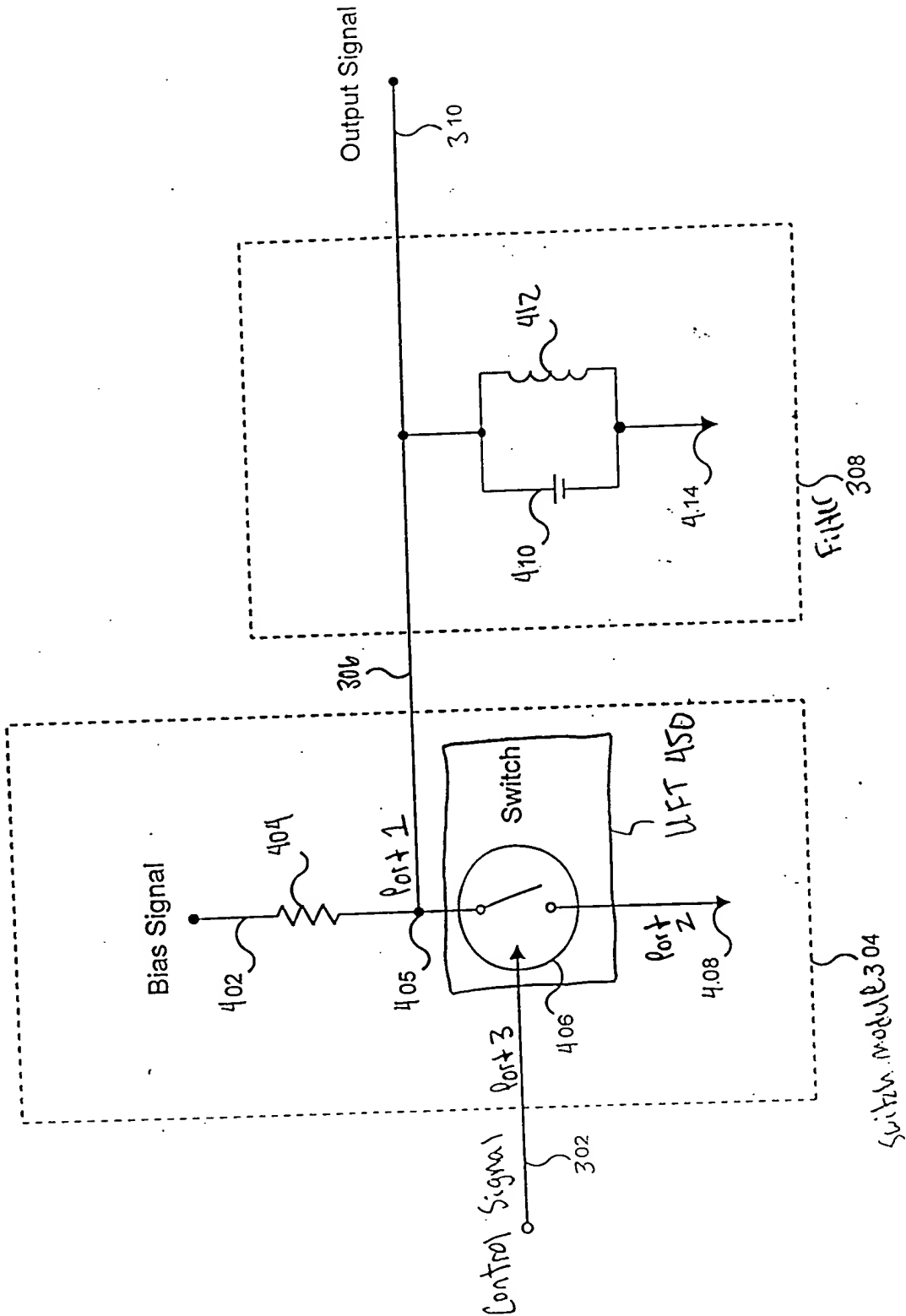


FIG. 4

Universal Frequency
up-conversion
(UFW) module 590

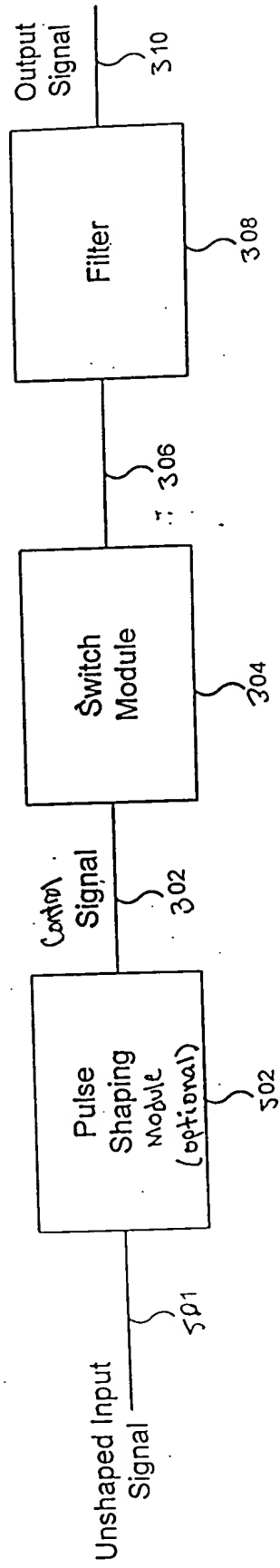


FIG. 5



Fig. 6A

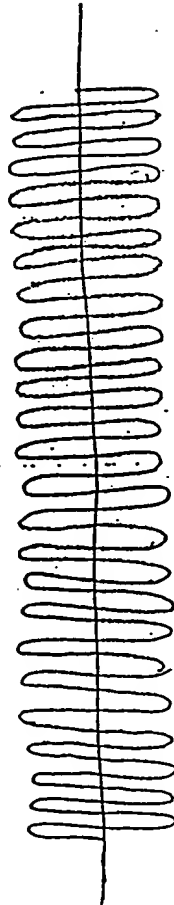


Fig: 68

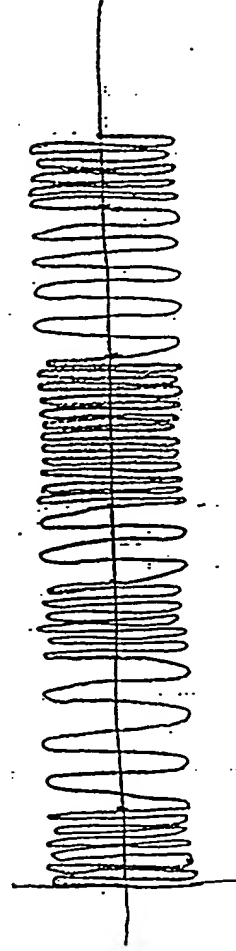


FIG. 6C

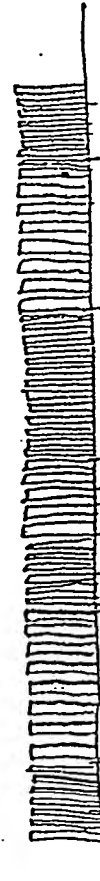
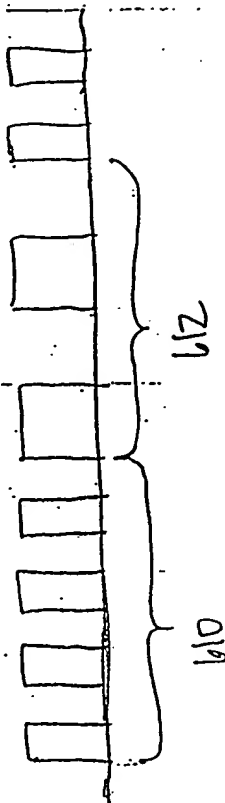


Fig. 6D

31.01.23

Fig. 6

EXPANDED VIEW OF
HARMONICALLY RICH
SIGNAL 603



59

File 66

99.013 335

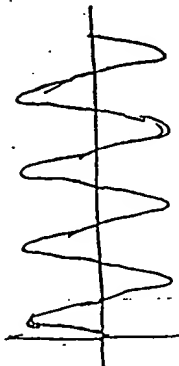
610

112

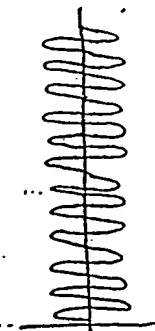
HARMONICS OF

SIGNAL BIO

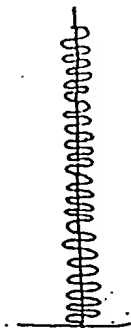
(shown)



FUNDAMENTAL
FREQUENCY
610A



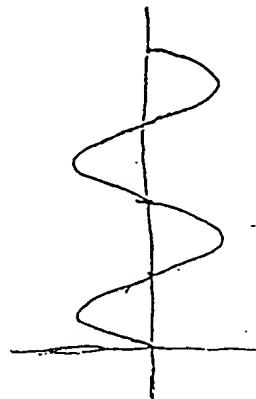
THIRD HARMONIC
6:03



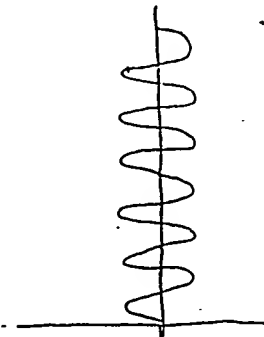
FIFTH HARMONIC
610C

Fig. 1F

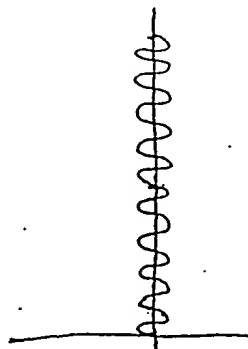
HARMONICS OF SIGNAL UZ SHOWING SEPARATELY)



FUNDAMENTAL
FREQUENCY
612A



612B
THIRD HARMONIC



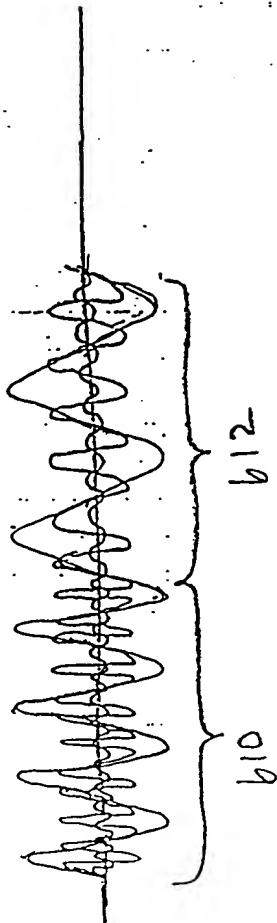
FIFTH HARMONIC
6.12C.

FIG 66

FIG. 6 (cont)

**Don't let your car
get away from you.**

#9 517



FILTERED
OUTPUT
SIGNAL

612C

Fig. 6I

FIG 6 (cont)

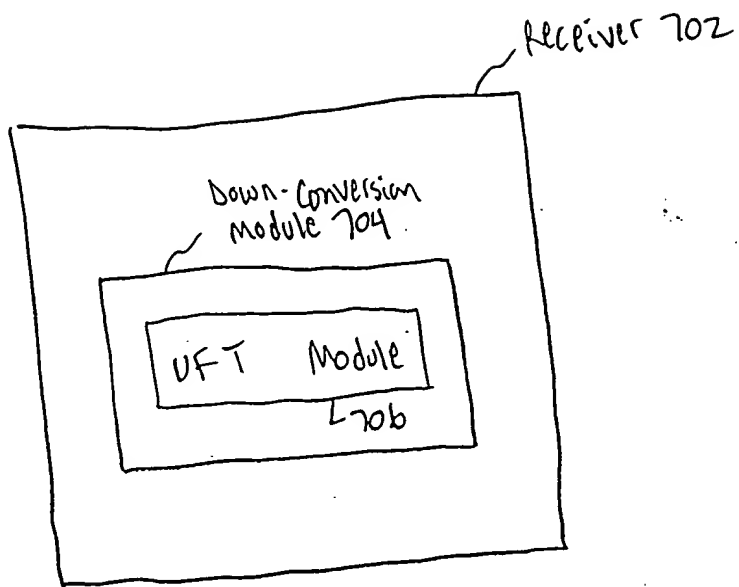


FIG. 7

004080 253695

004037 45626960

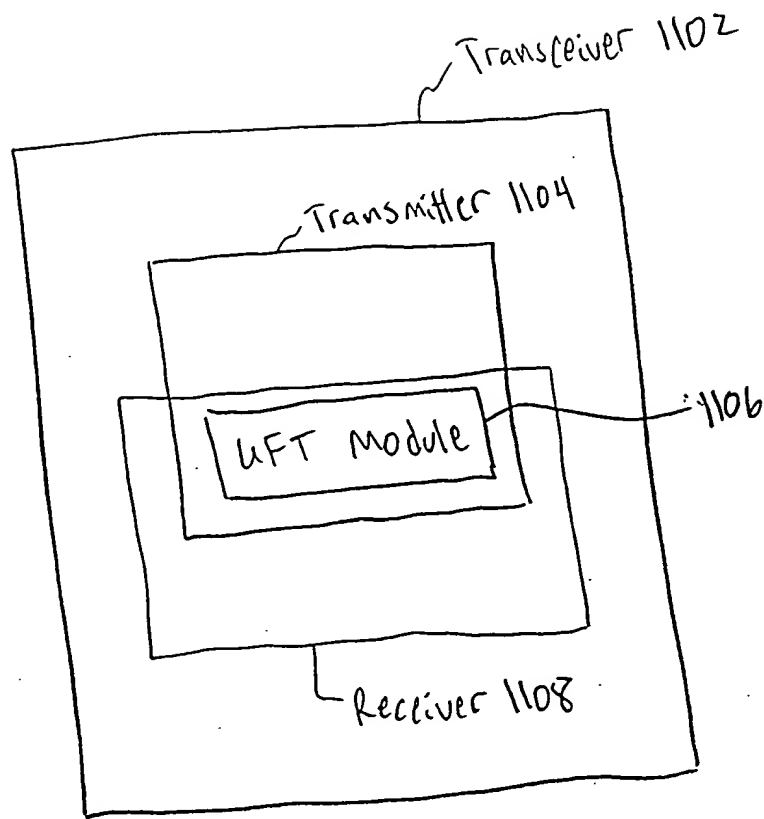


FIG. 11

Unified Down-converting
and Filtering (UDF) module 1302

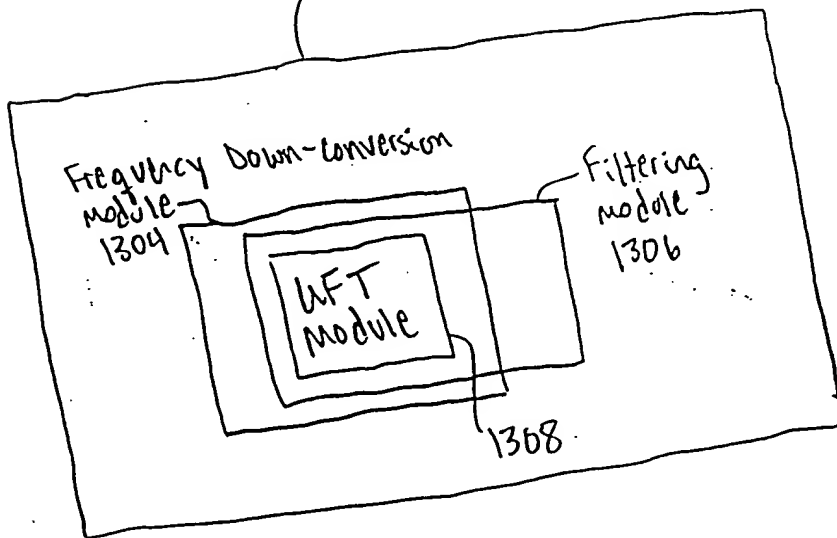


FIG. 13

204280-26325960

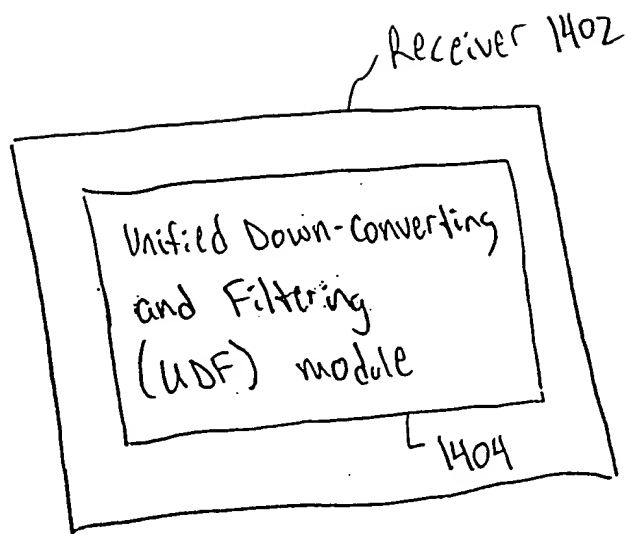


FIG. 14

004080 26826960



FIG. 15A

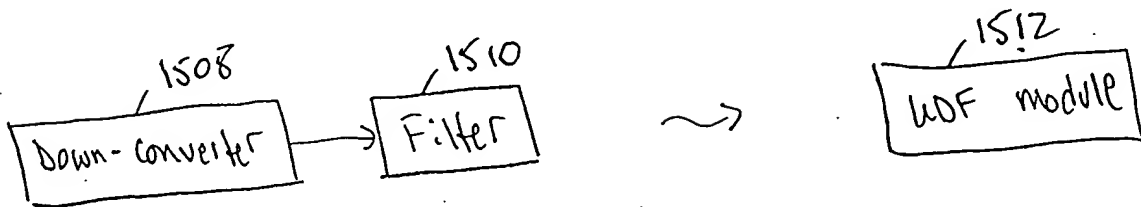


FIG. 15B

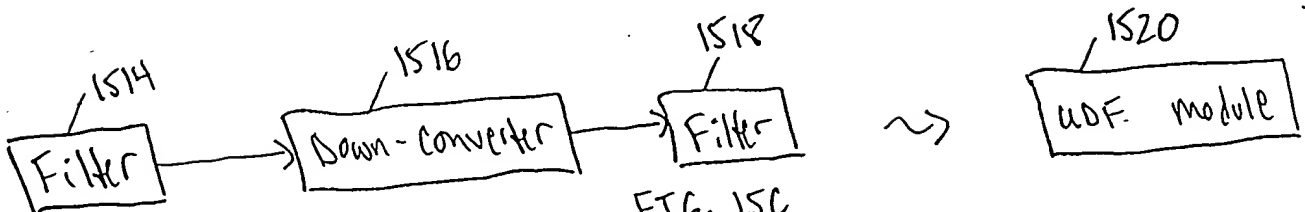


FIG. 15C

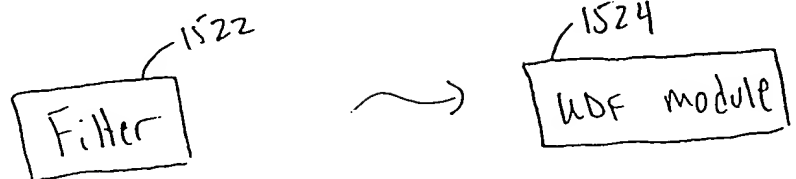


FIG. 15D

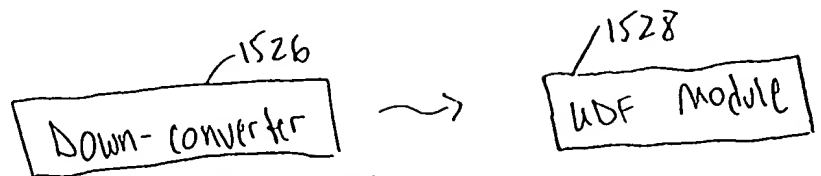


FIG. 15E

004080-26926950

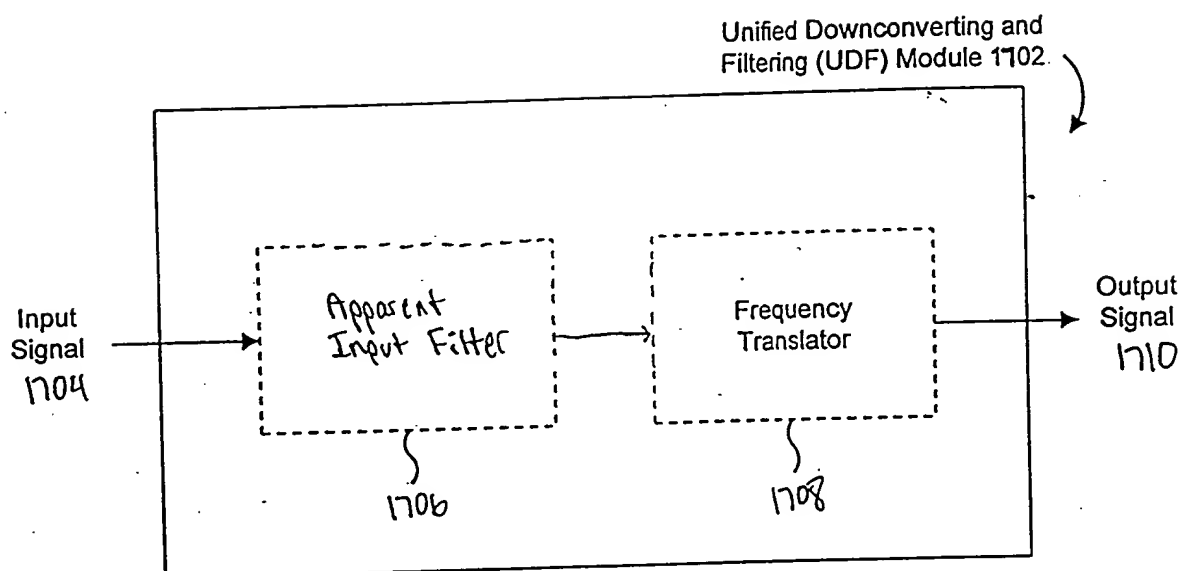


FIG. 17

1802

Time Node	t-1 (rising edge of ϕ_1)	t-1 (rising edge of ϕ_2)	t (rising edge of ϕ_1)	t (rising edge of ϕ_2)	t+1 (rising edge of ϕ_1)
1902	VI_{t-1} <u>1804</u>	VI_{t-1} <u>1808</u>	VI_t <u>1816</u>	VI_t <u>1826</u>	VI_{t+1} <u>1838</u>
1904	—	VI_{t-1} <u>1810</u>	VI_{t-1} <u>1818</u>	VI_t <u>1828</u>	VI_t <u>1840</u>
1906	VO_{t-1} <u>1806</u>	VO_{t-1} <u>1812</u>	VO_t <u>1820</u>	VO_t <u>1830</u>	VO_{t+1} <u>1842</u>
1908	—	VO_{t-1} <u>1814</u>	VO_{t-1} <u>1822</u>	VO_t <u>1832</u>	VO_t <u>1844</u>
1910	— <u>1807</u>	—	VO_{t-1} <u>1824</u>	VO_{t-1} <u>1834</u>	VO_t <u>1846</u>
1912	—	— <u>1815</u>	—	VO_{t-1} <u>1836</u>	VO_{t-1} <u>1848</u>
1918	—	—	—	—	VI_t - <u>1850</u> $0.1 * VO_t$ $0.8 * VO_{t-1}$

FIG. 18

004020" 2532E 950

VOF module 1972
(band pass)

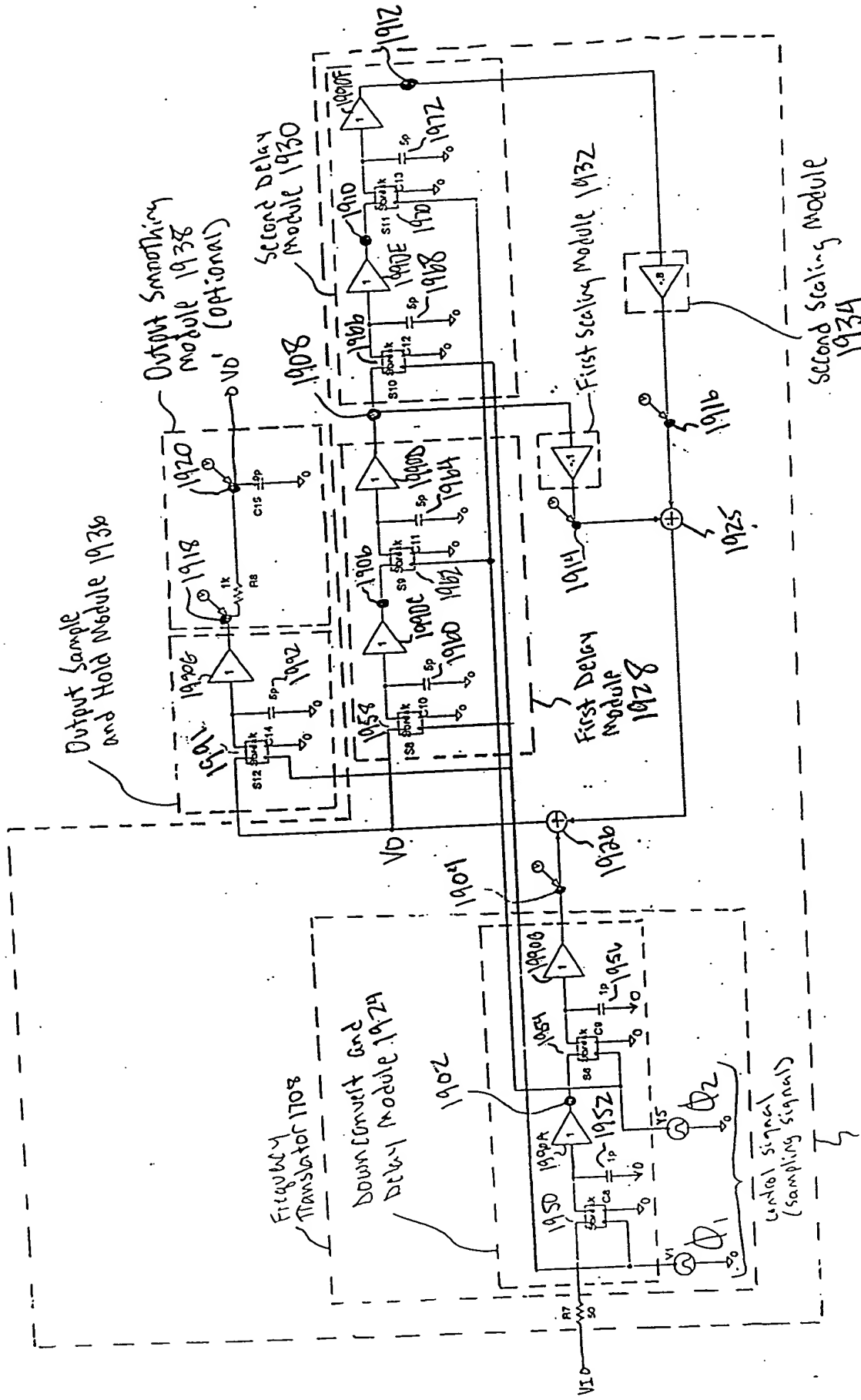


FIG. 19

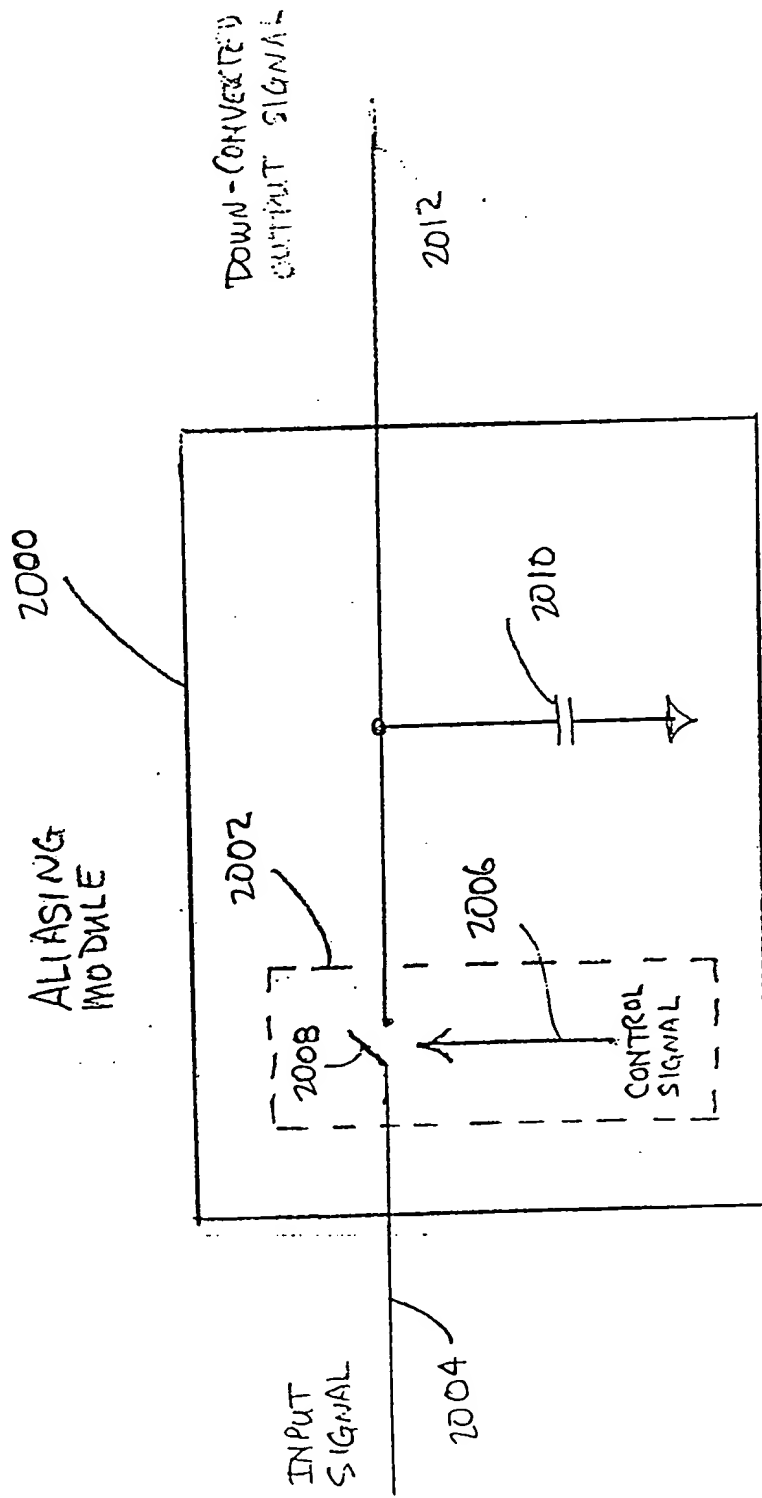


FIG. 20A

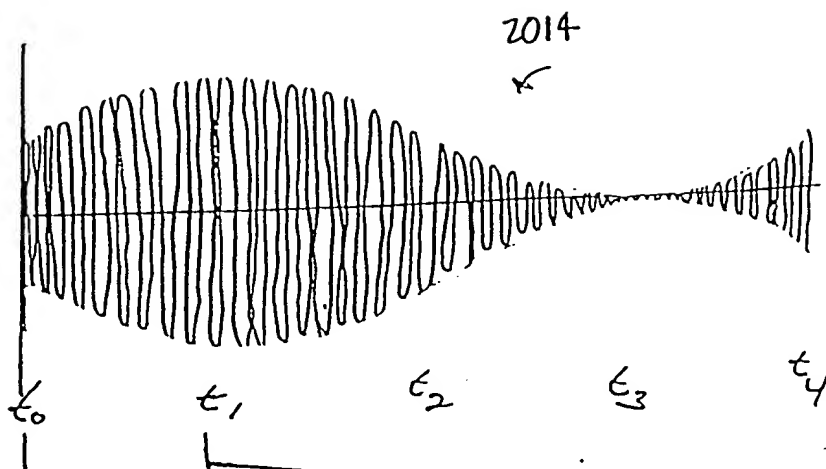


FIG. 20B

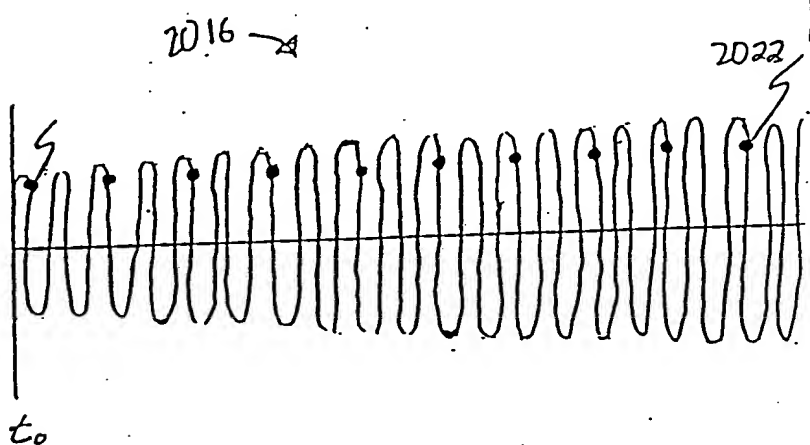


FIG. 20C

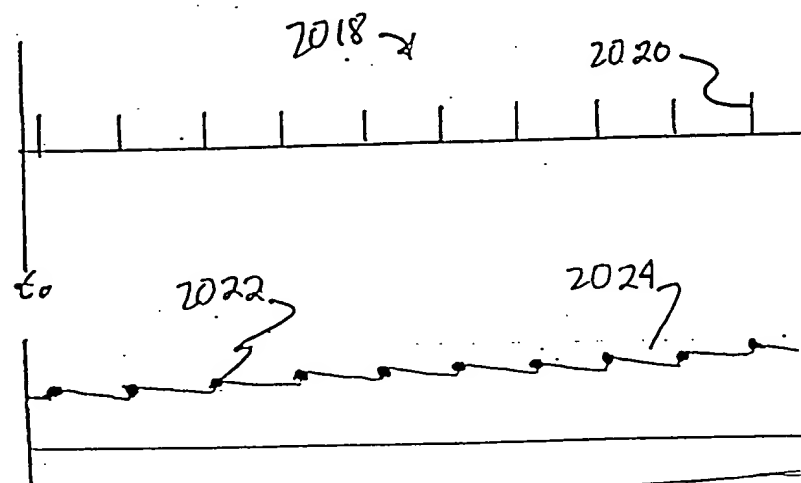


FIG. 20D

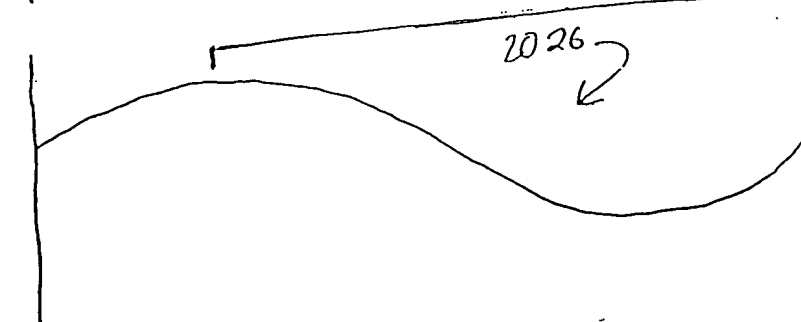


FIG. 20E

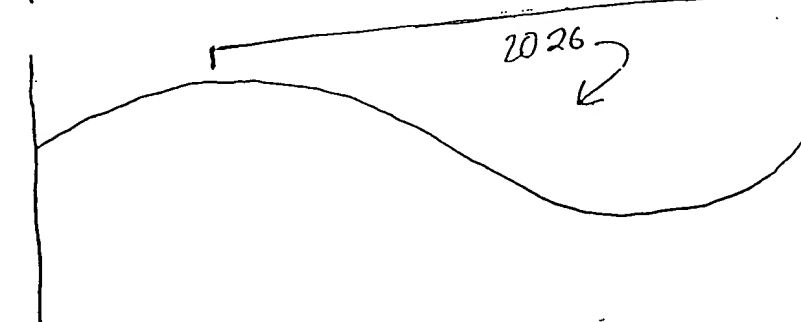


FIG. 20F

004000 259999

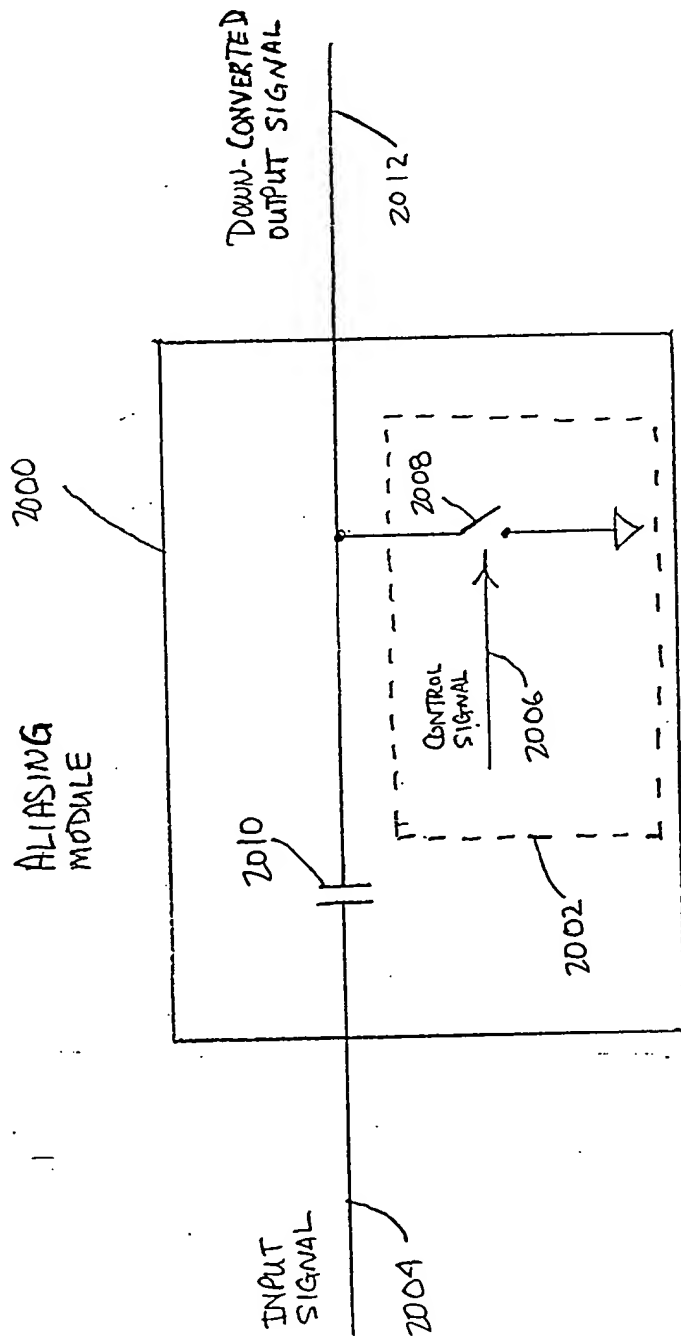


FIG. 20G

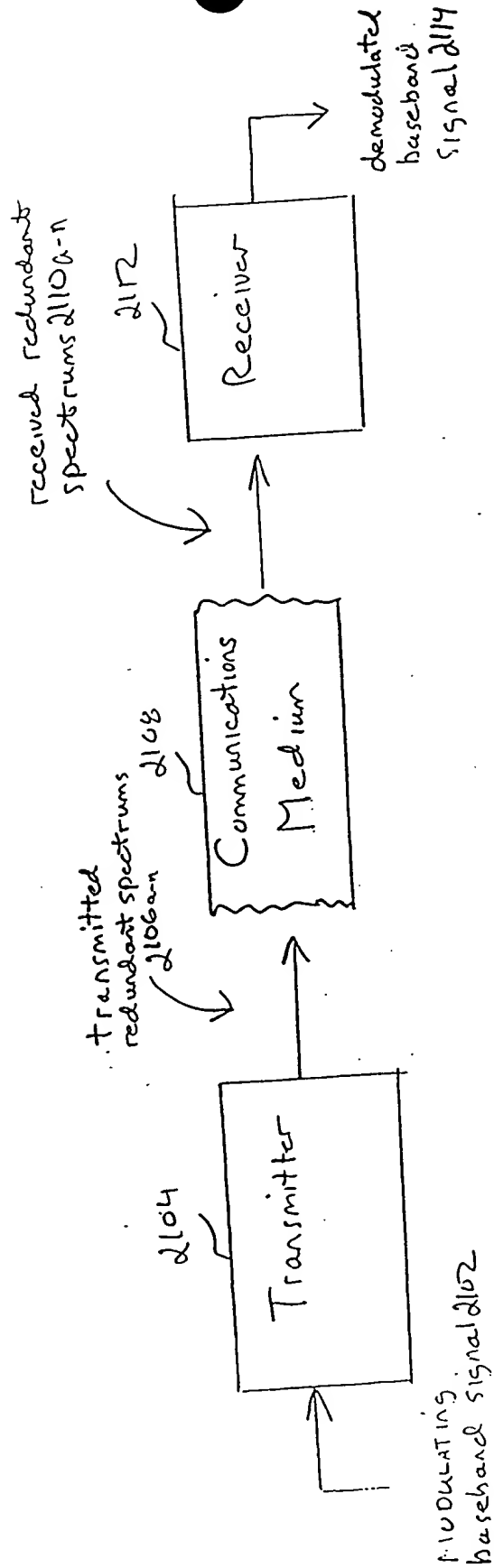
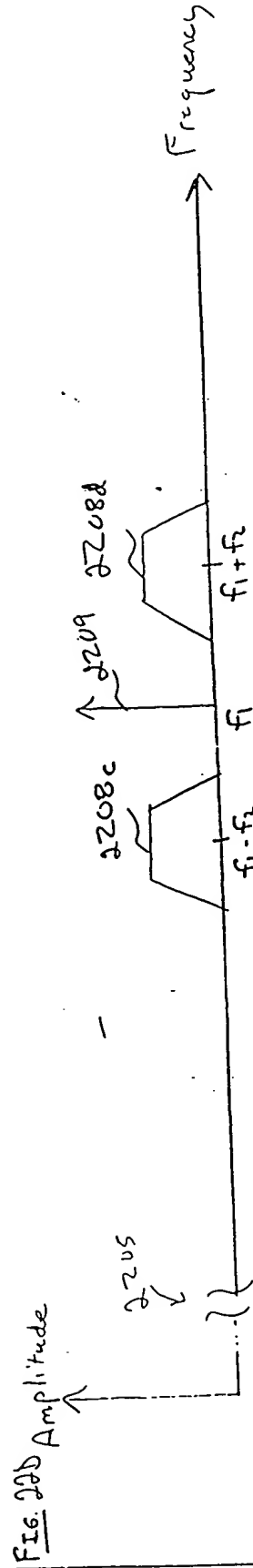
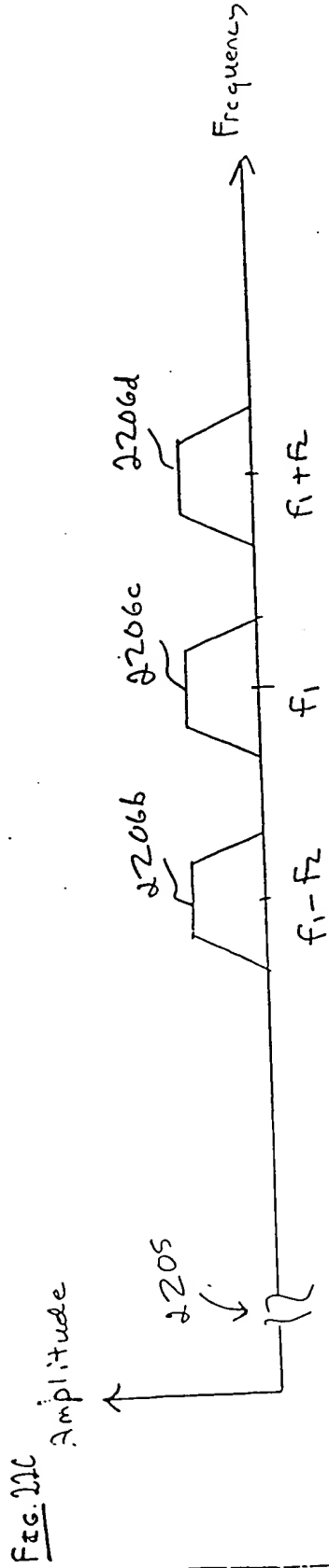
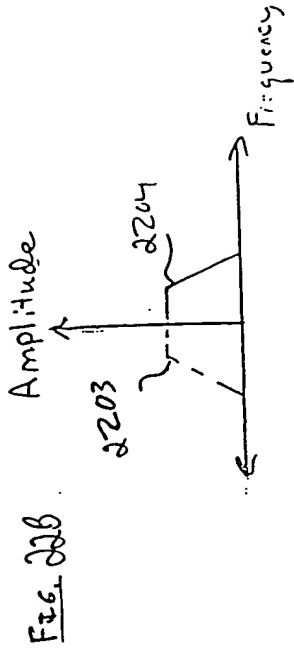
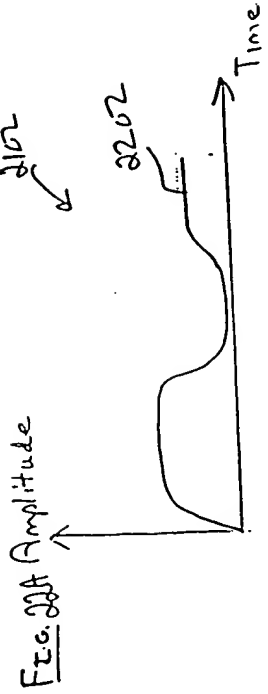
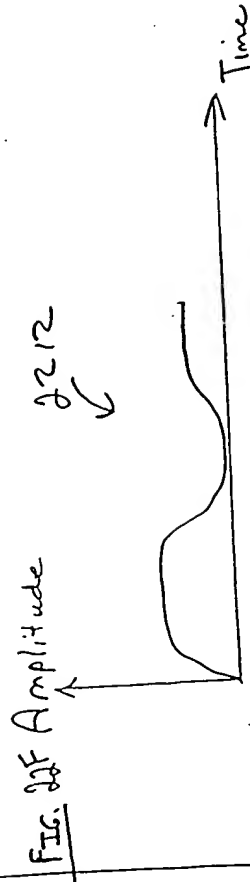
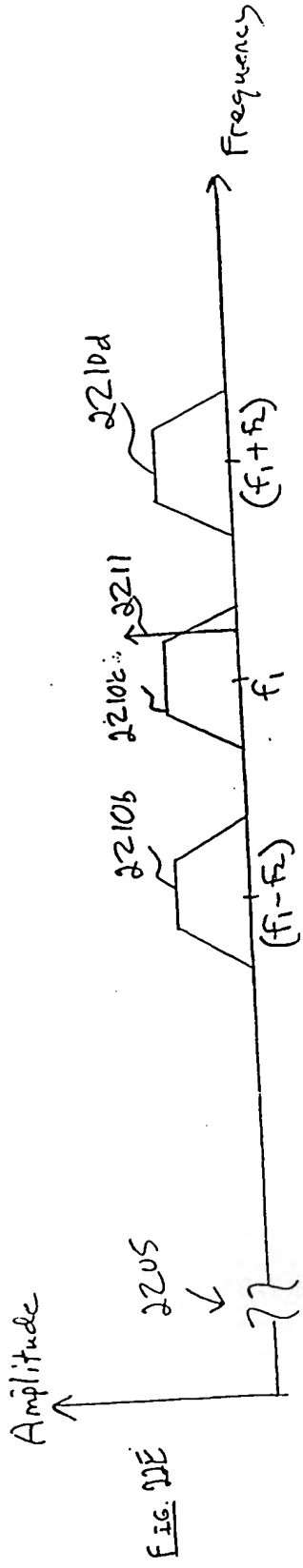
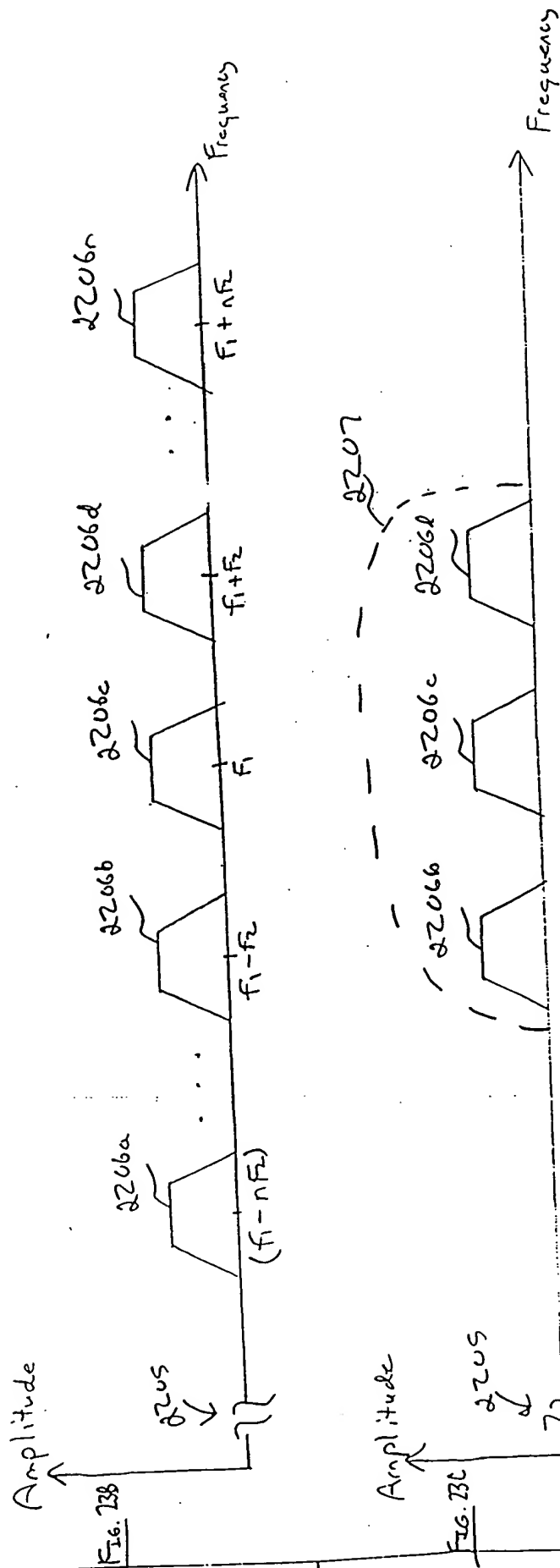


Fig. 21







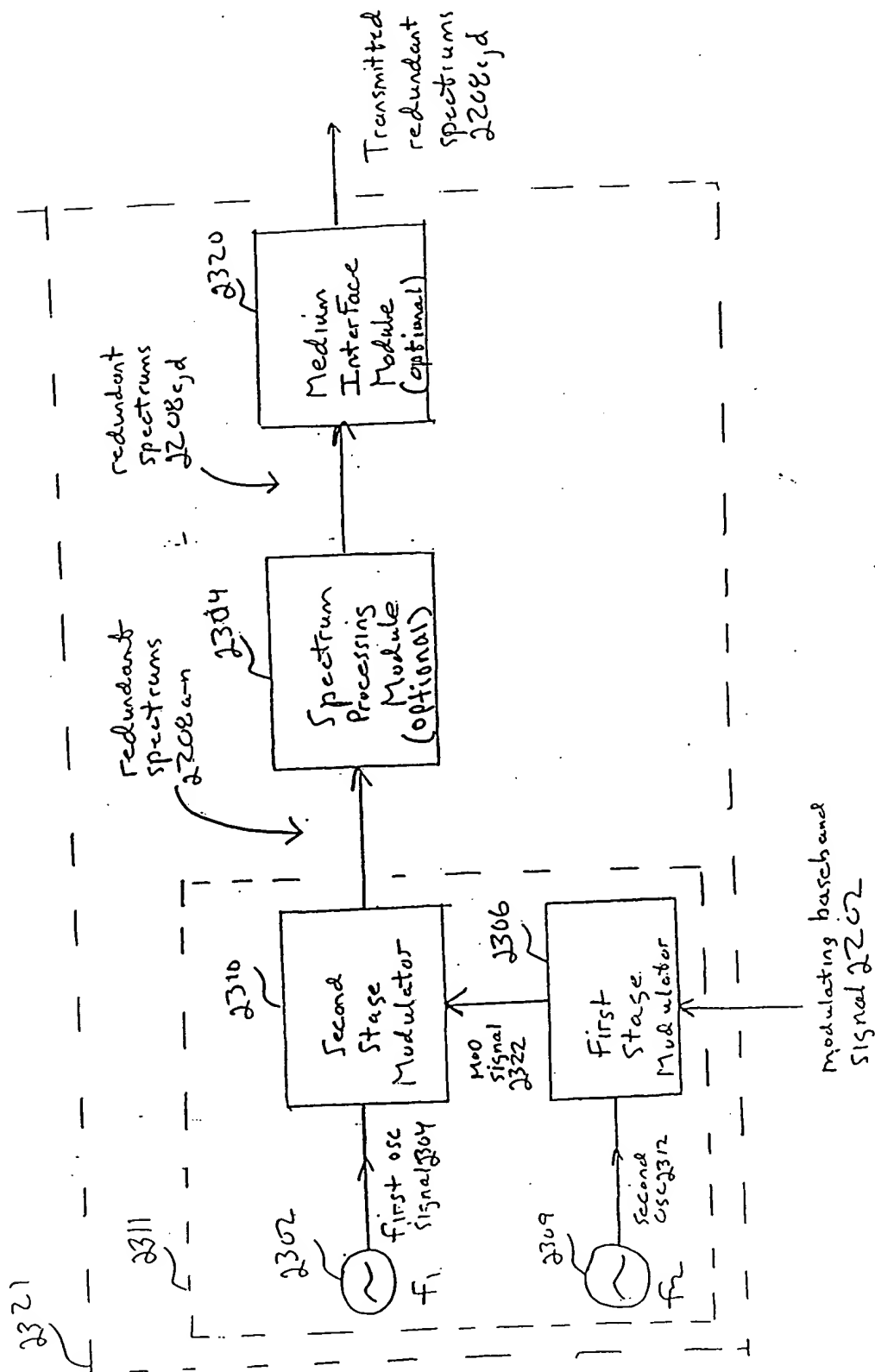


FIG. 23D

FIG. 23E

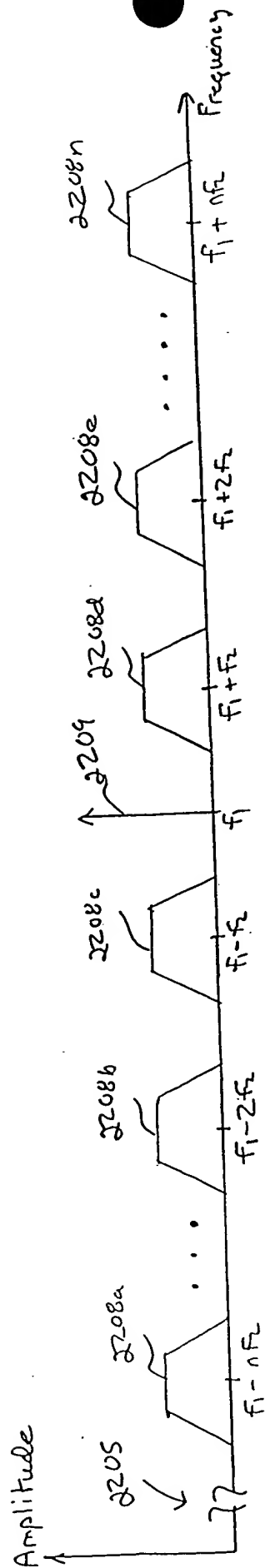
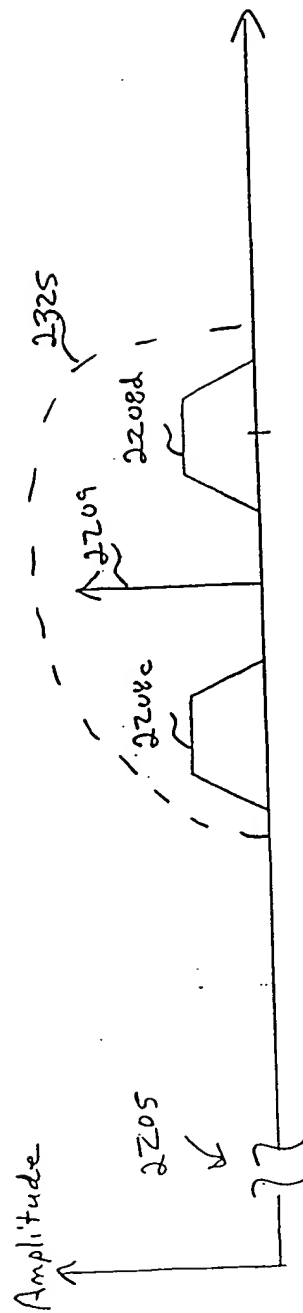


FIG. 23F



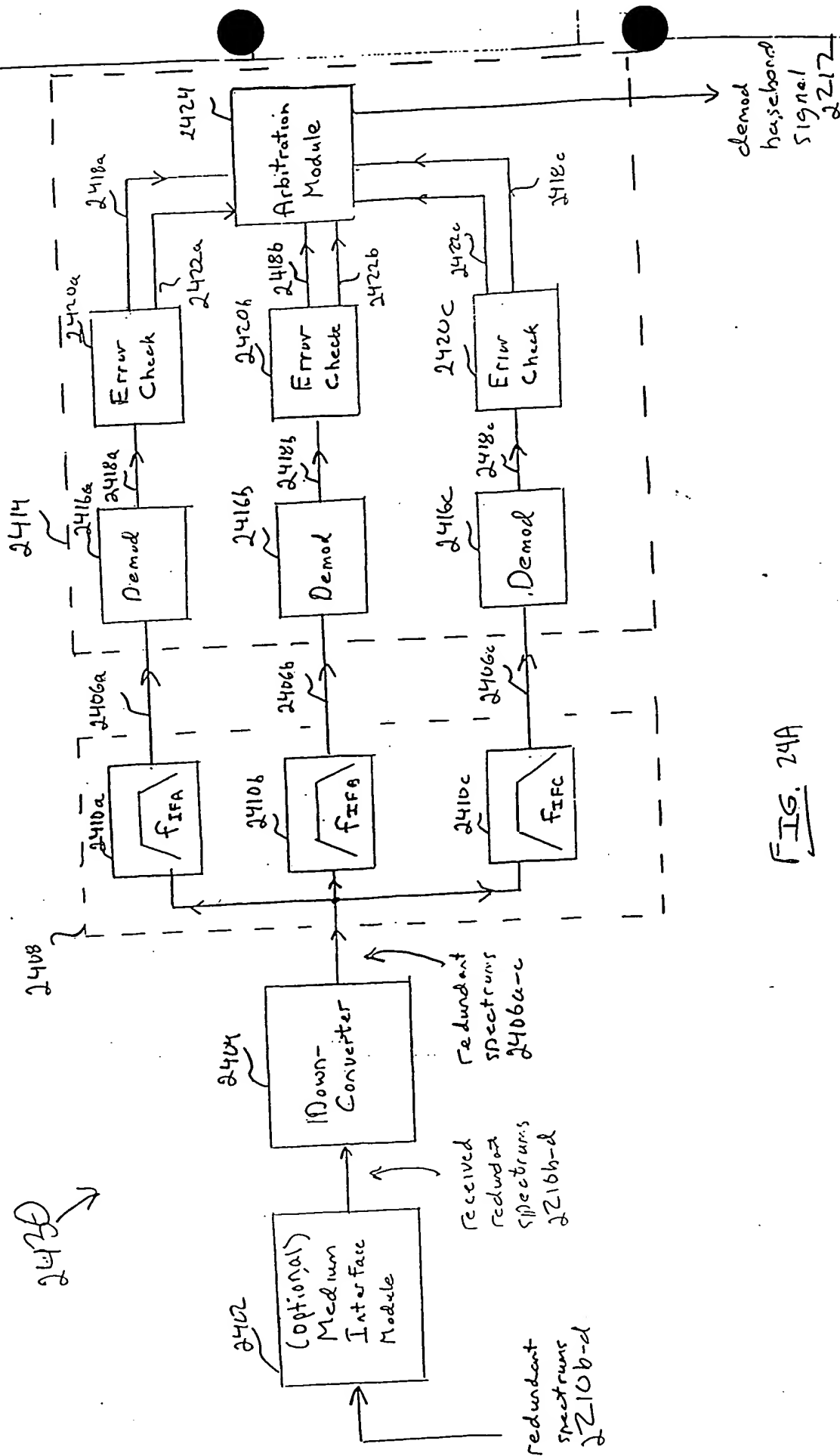
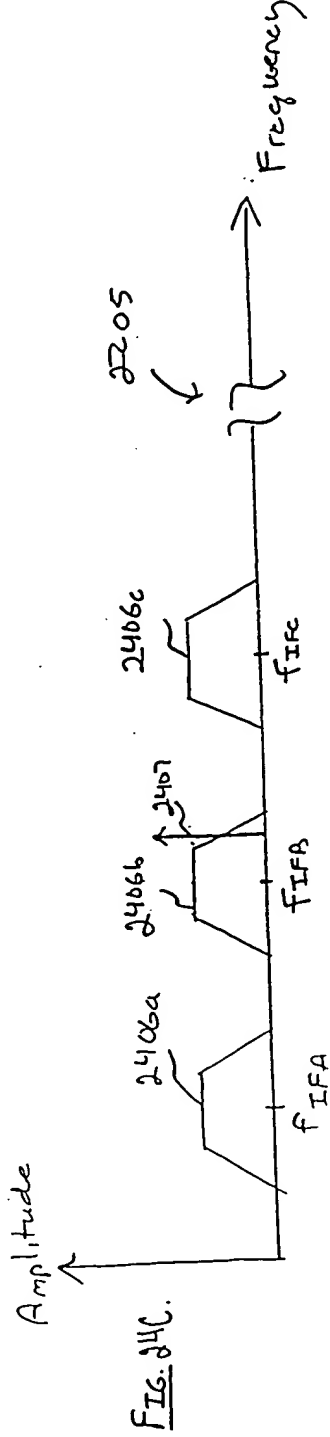
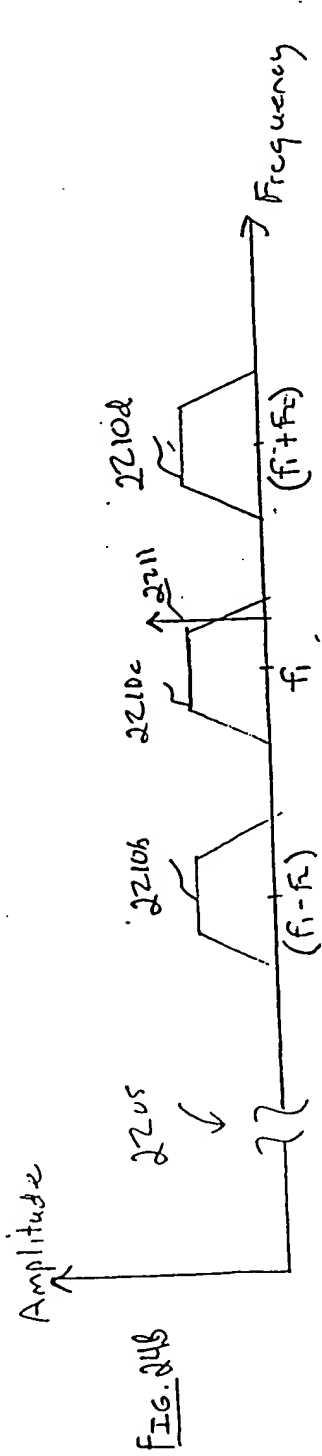
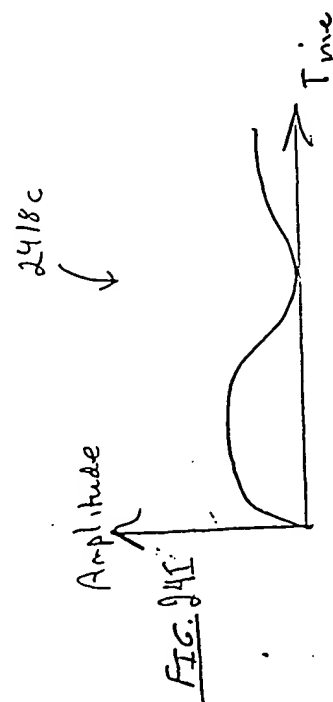
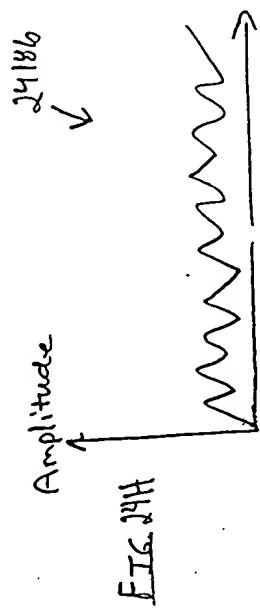
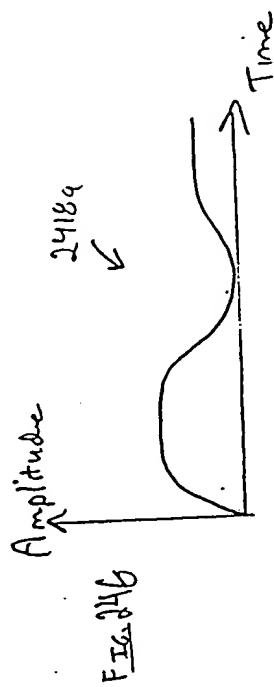
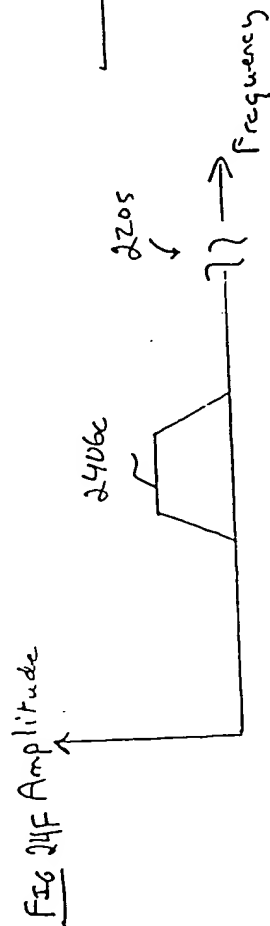
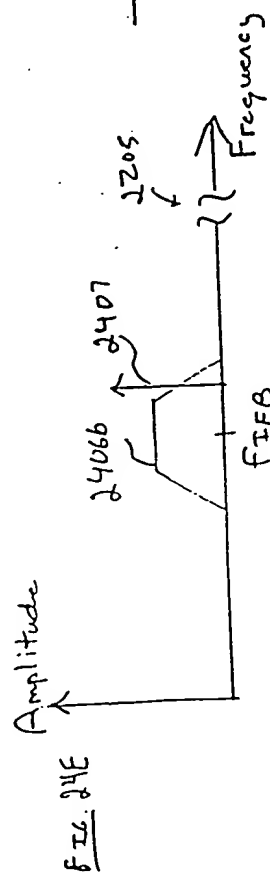
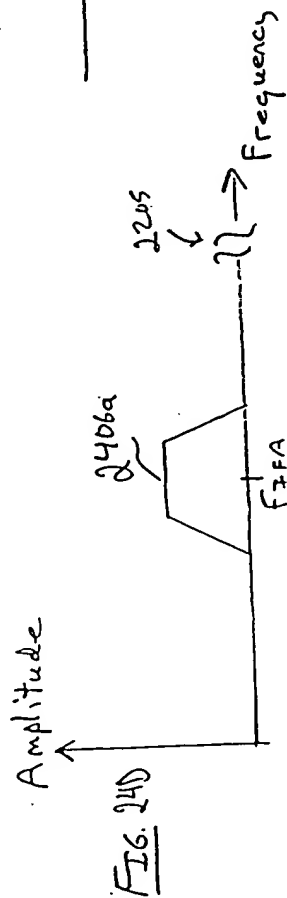
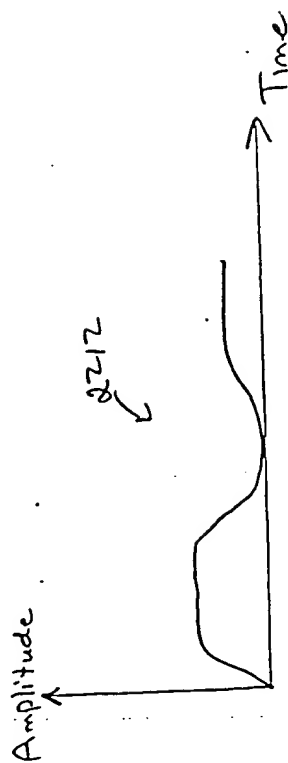


FIG. 24A





THE NATIONAL BRAND



FIC. 245

2502

Network 2534

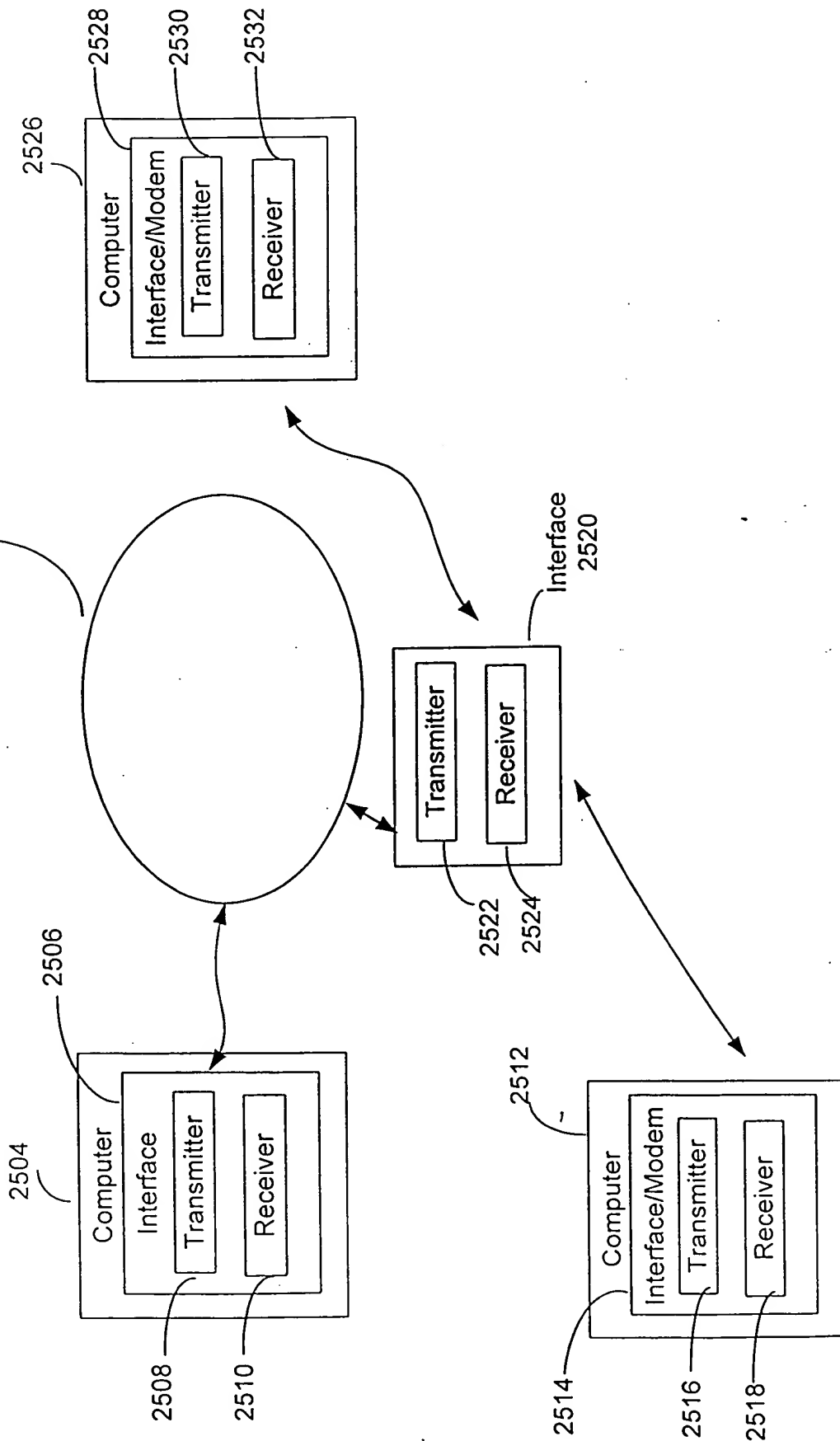


FIG. 25

2606

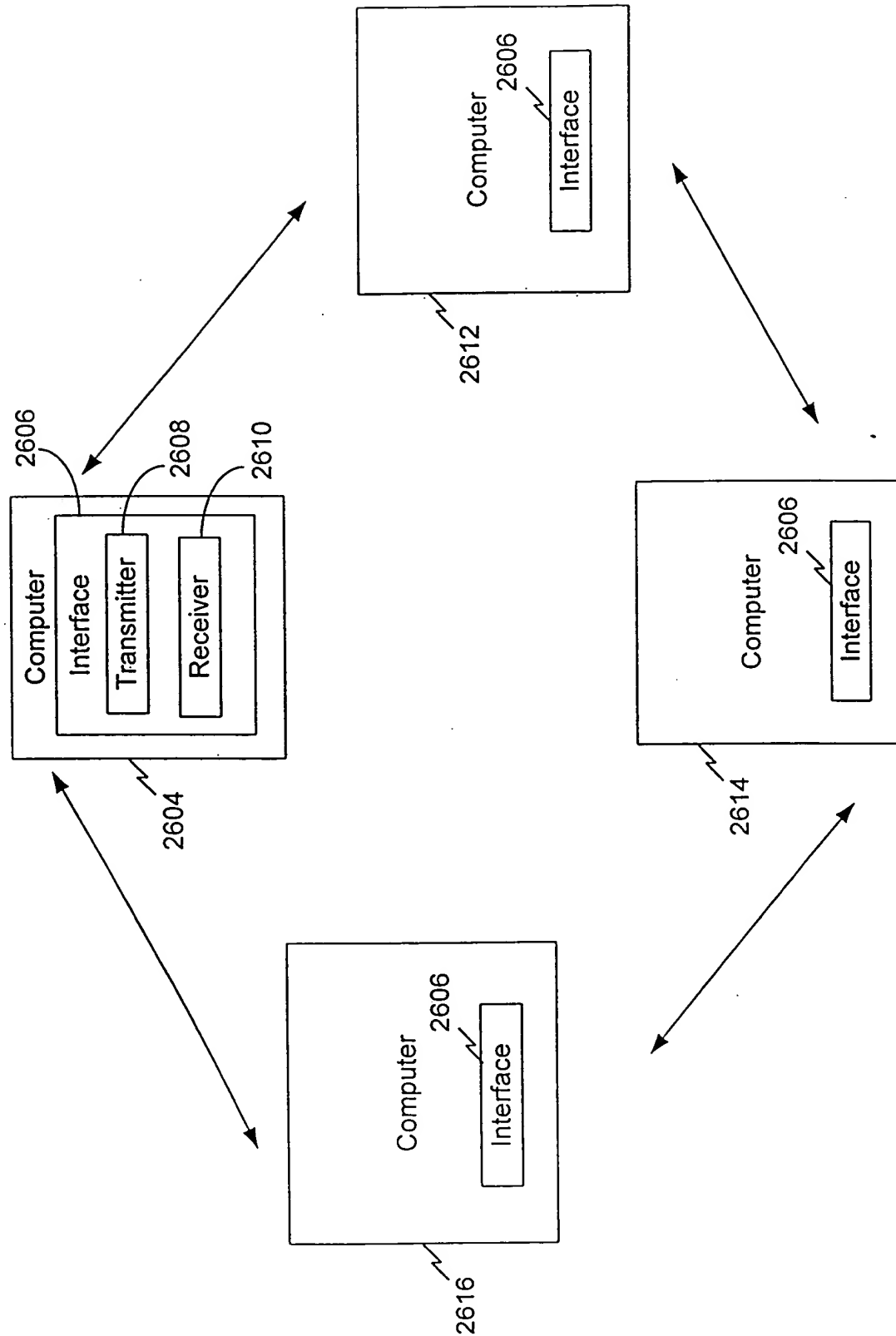


FIG. 26

2710

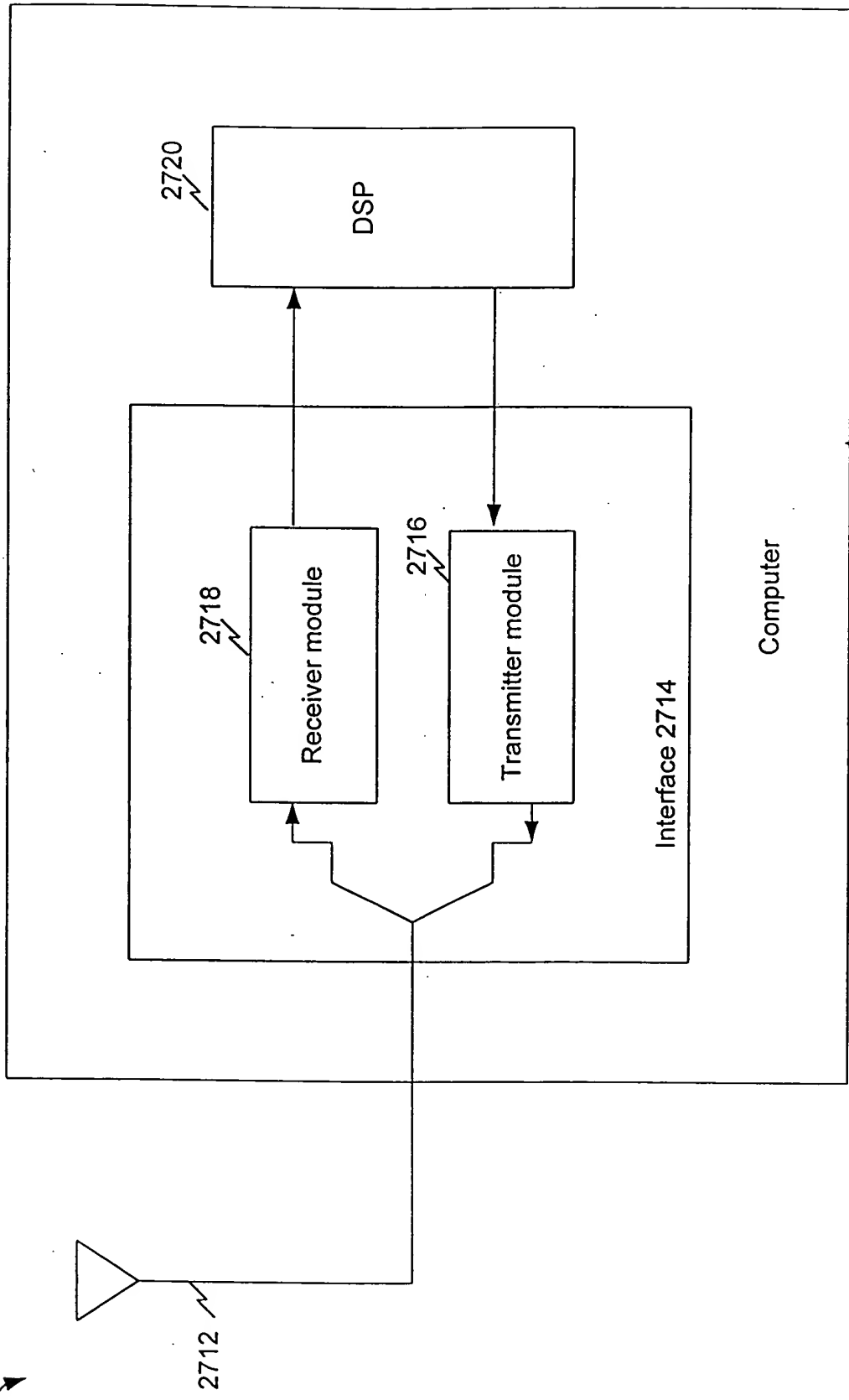
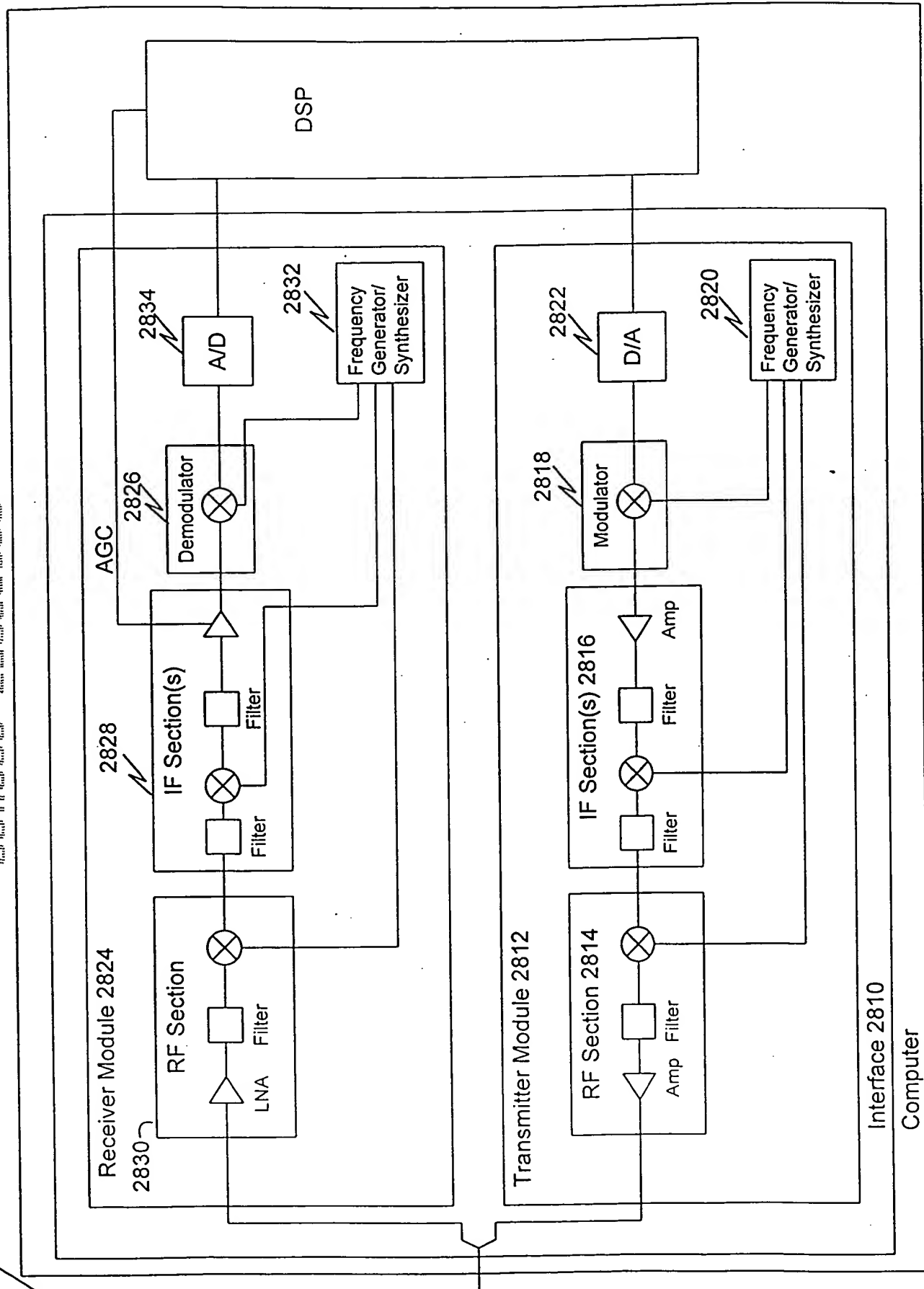


FIG. 27



Heterodyne Implementation

FIG. 28

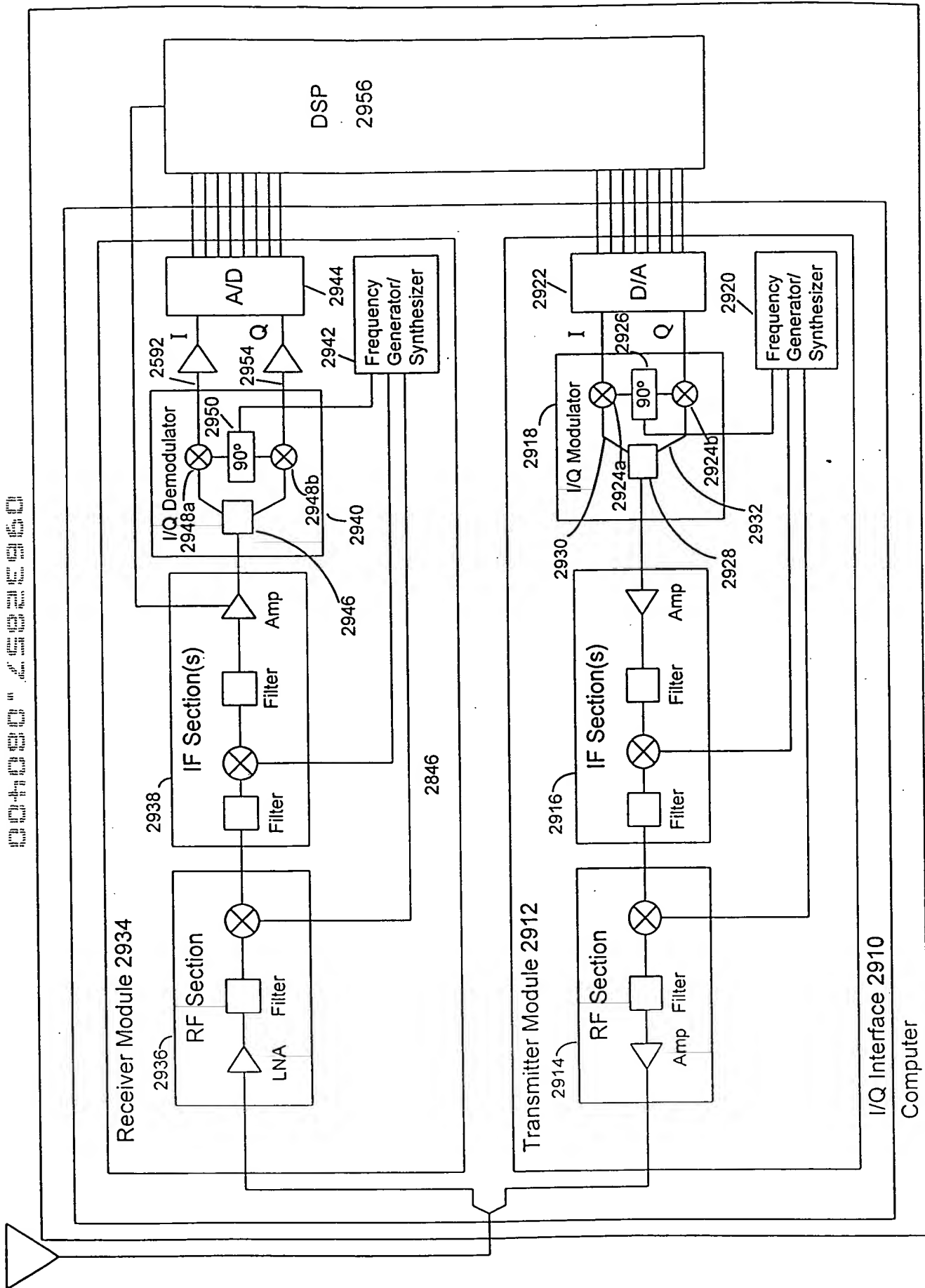


FIG. 29

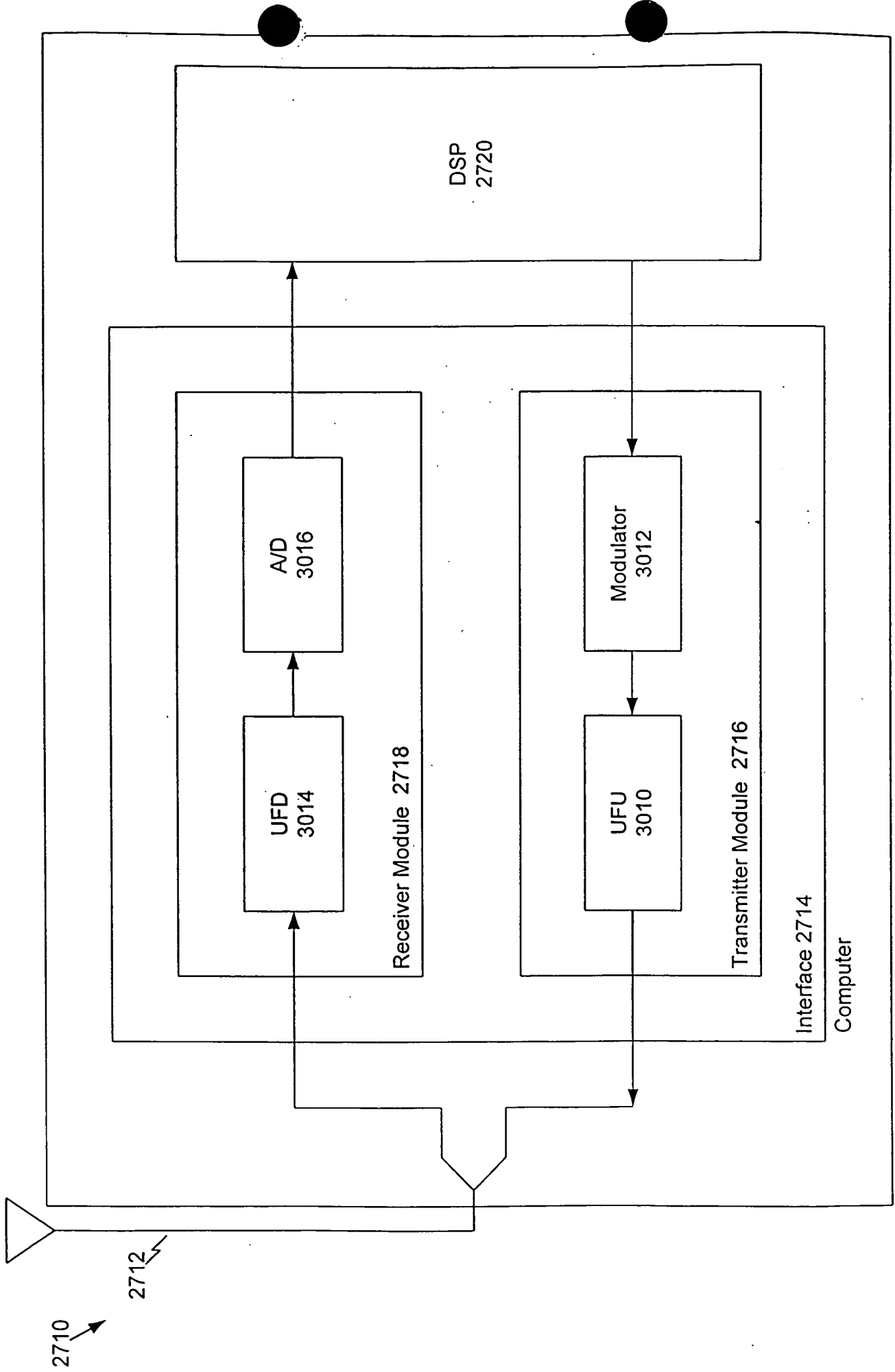


FIG. 30

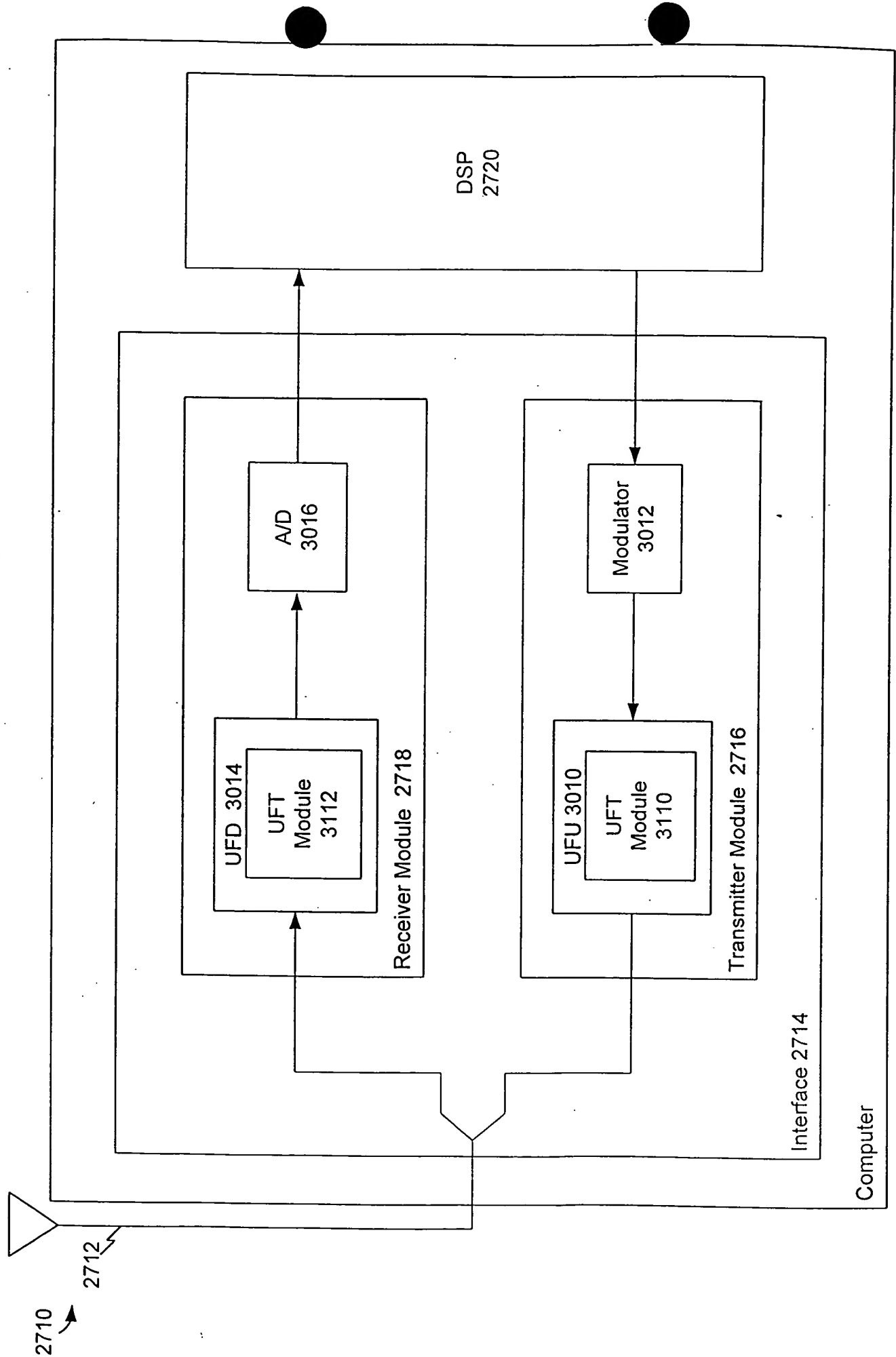


FIG. 31

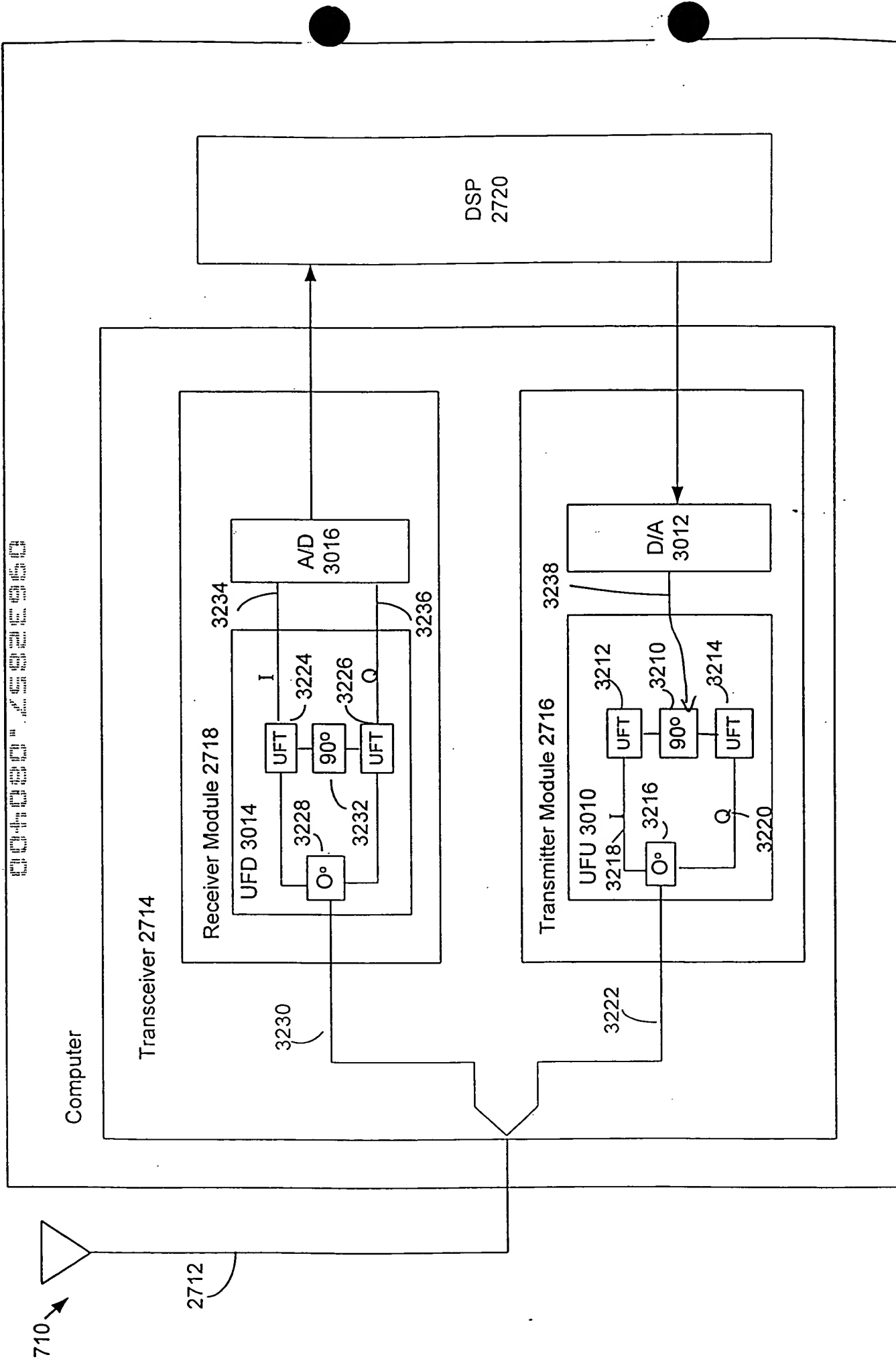


FIG. 32

004000/682450

3302
↓

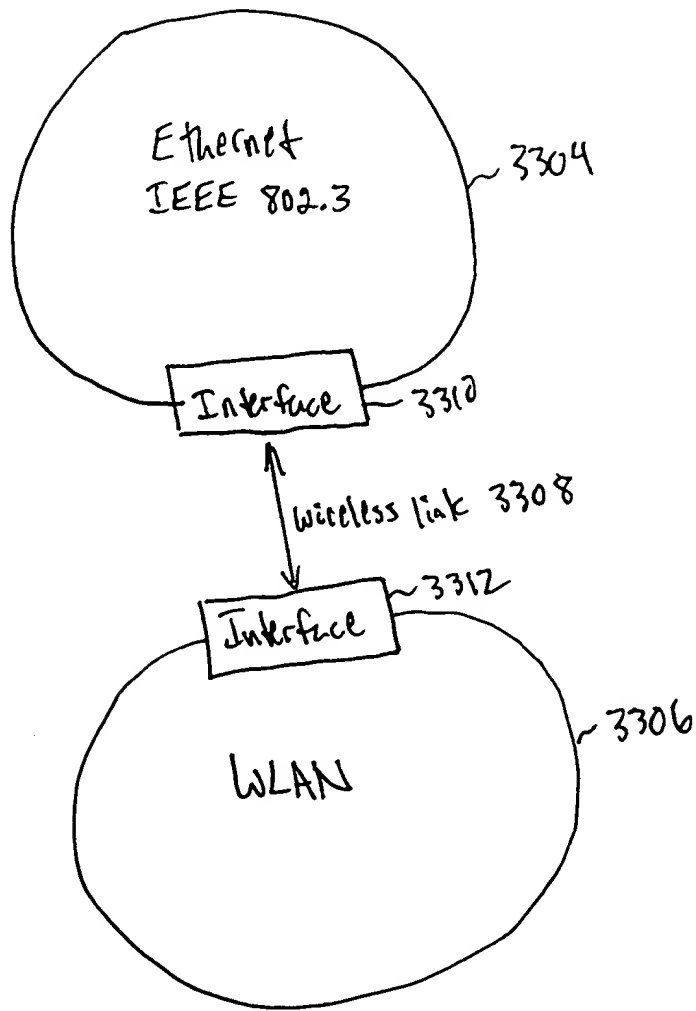


FIG. 33

20140303 20140303

3402
↓

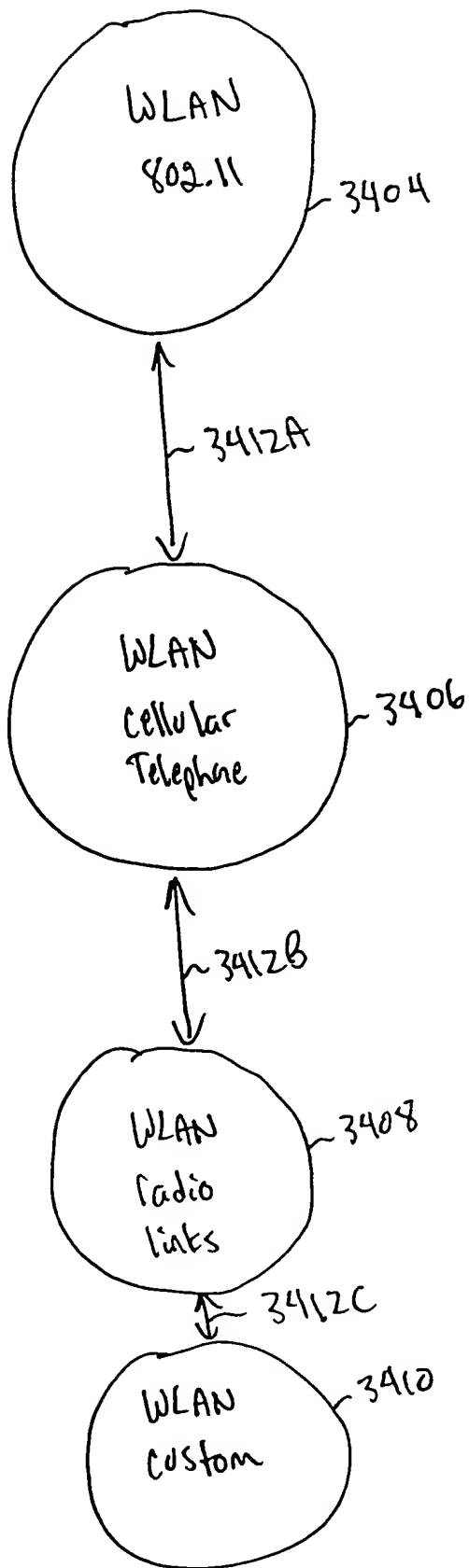
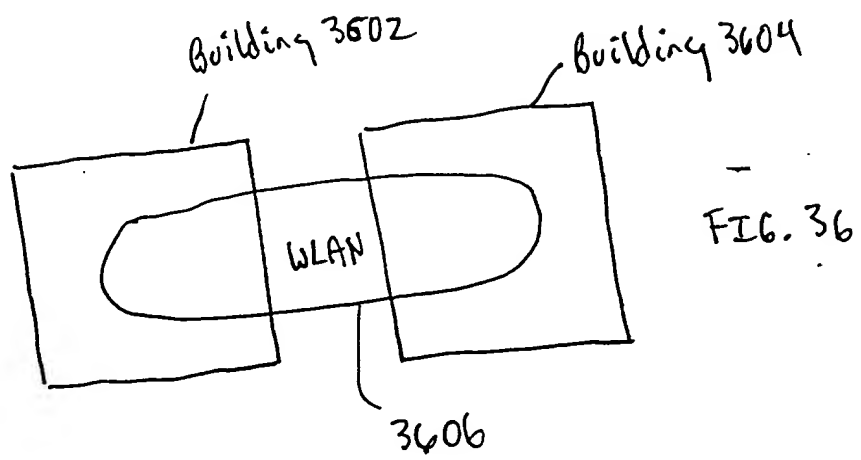
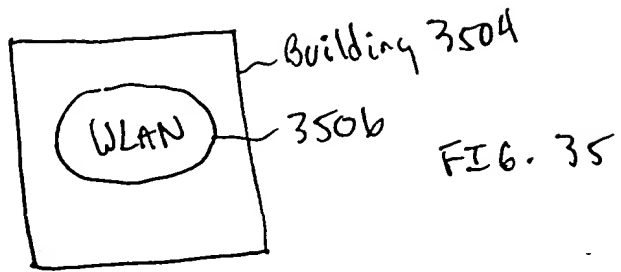


FIG. 34

3502



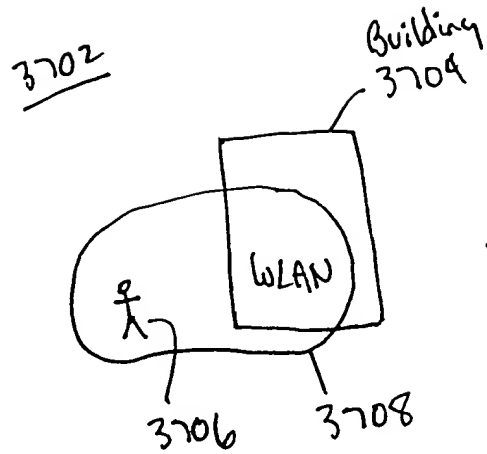


FIG. 37



FIG. 38

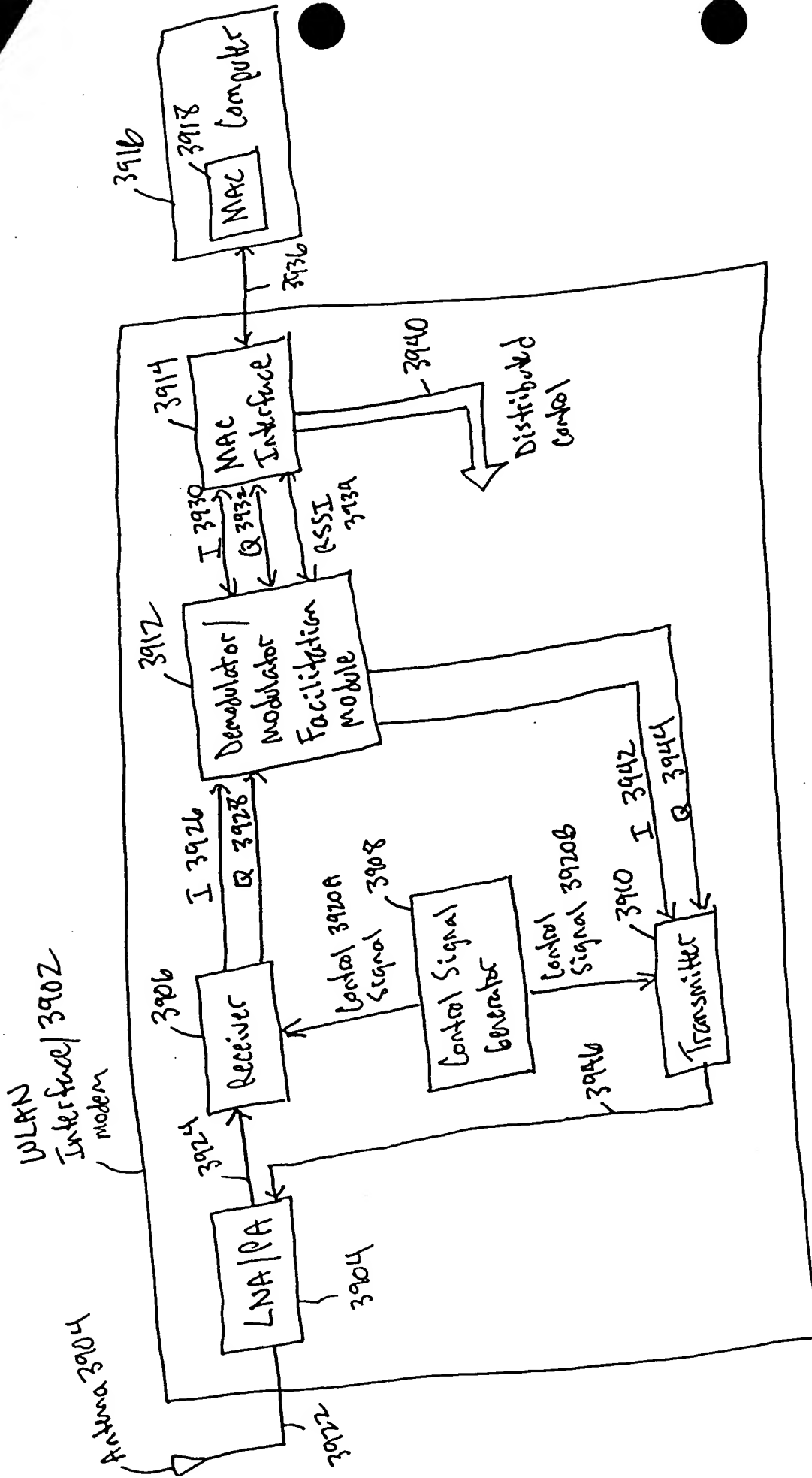


FIG. 39

004000 2532E260

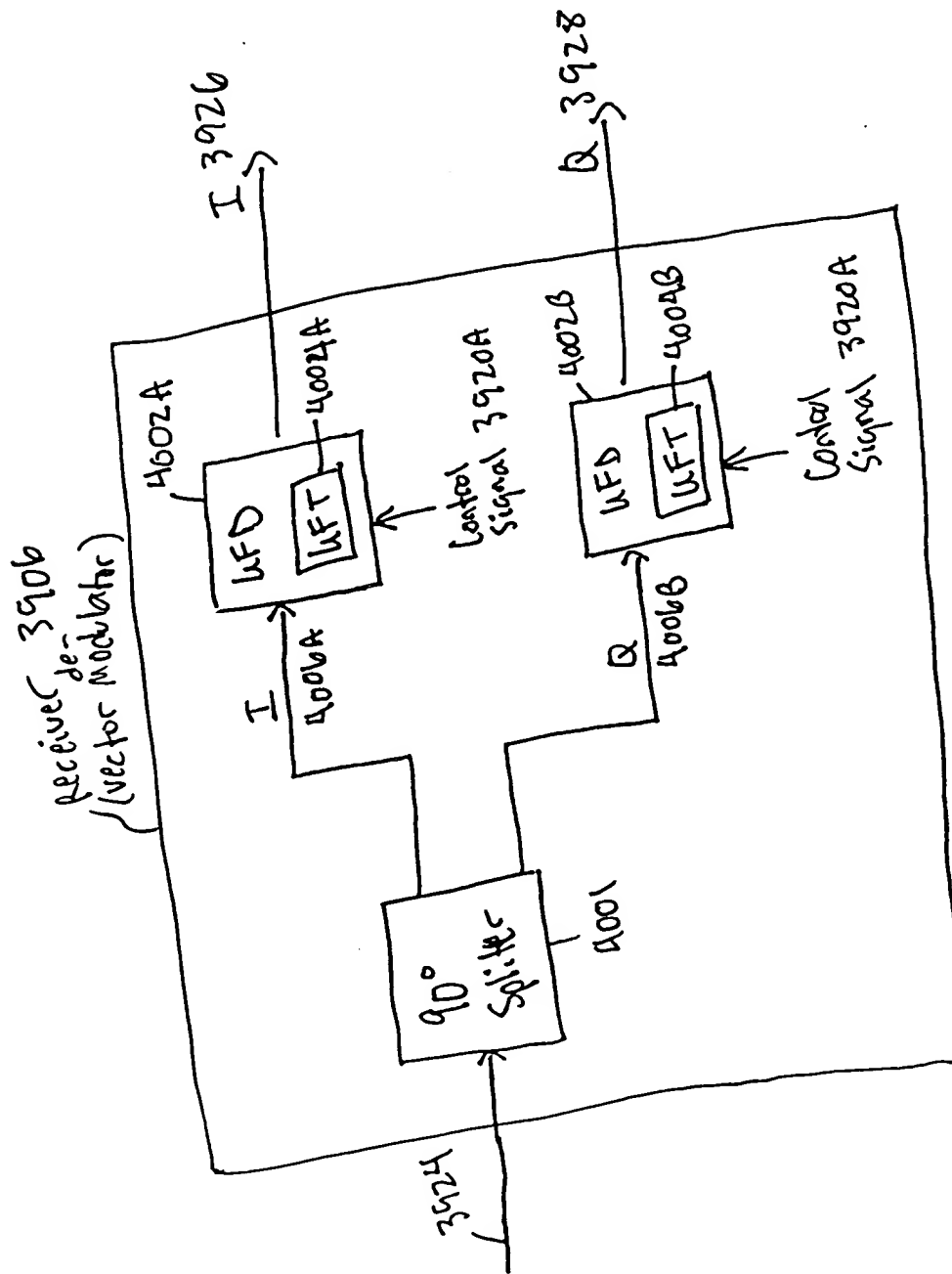


FIG. 40

vec

Transmitter 3910
(vector modulator)

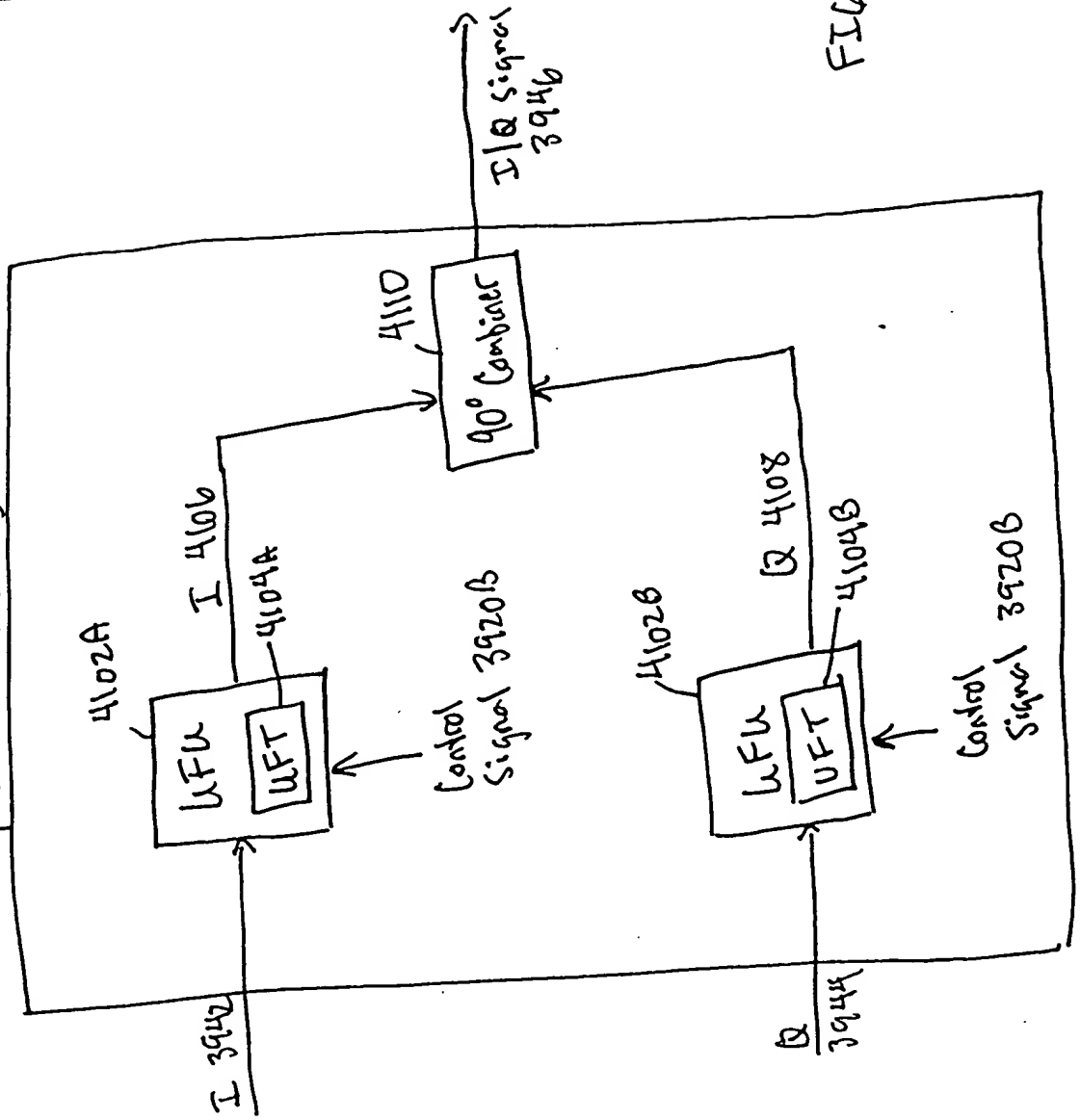
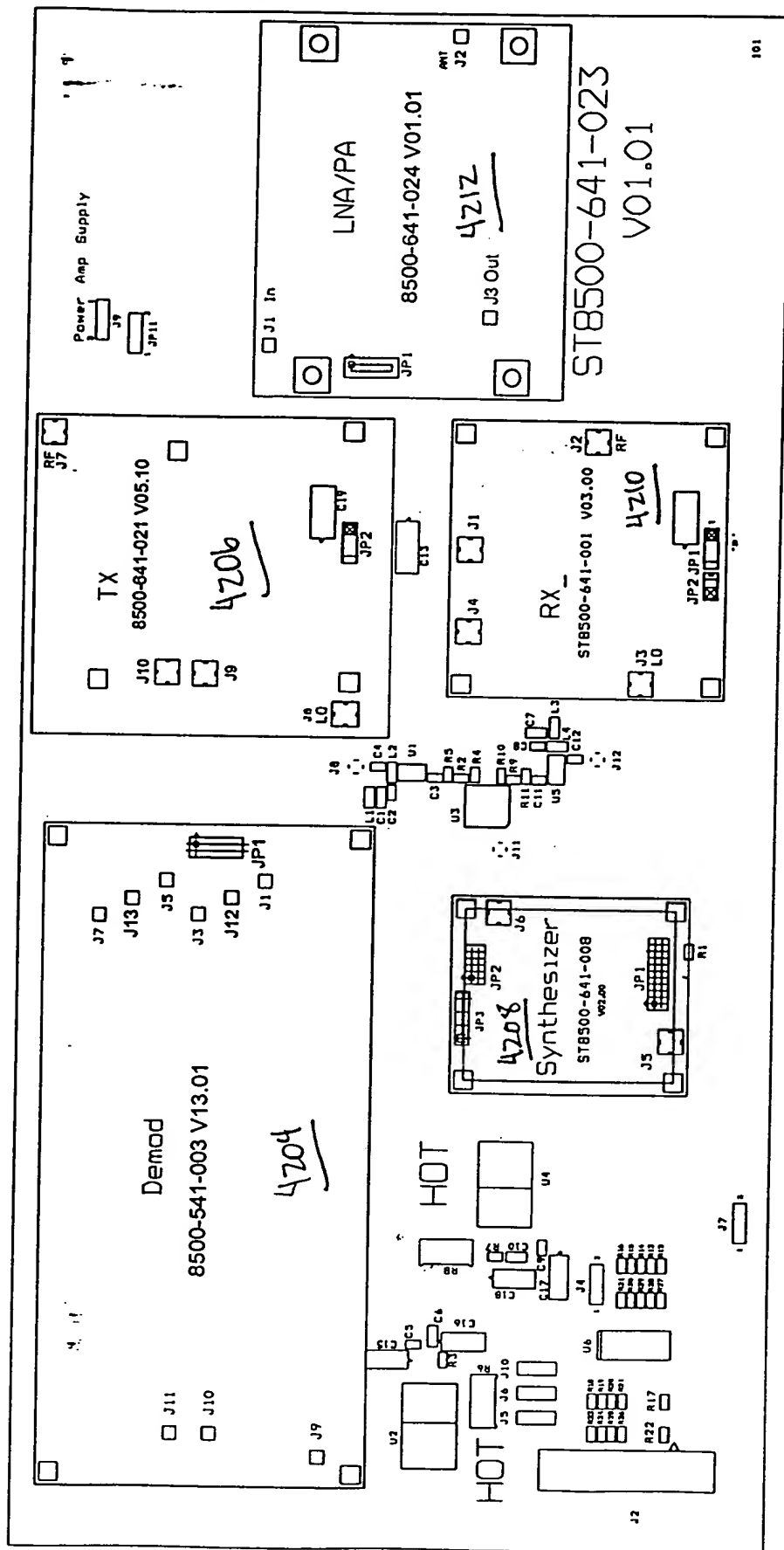


FIG. 41

004030 2322050

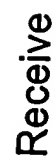
4202



T/R

FIG. 42

2057



FI 6.43

1. The first step is to identify the problem or goal. This involves understanding the current situation and what needs to be achieved.



FIG. 44

004030 2682960

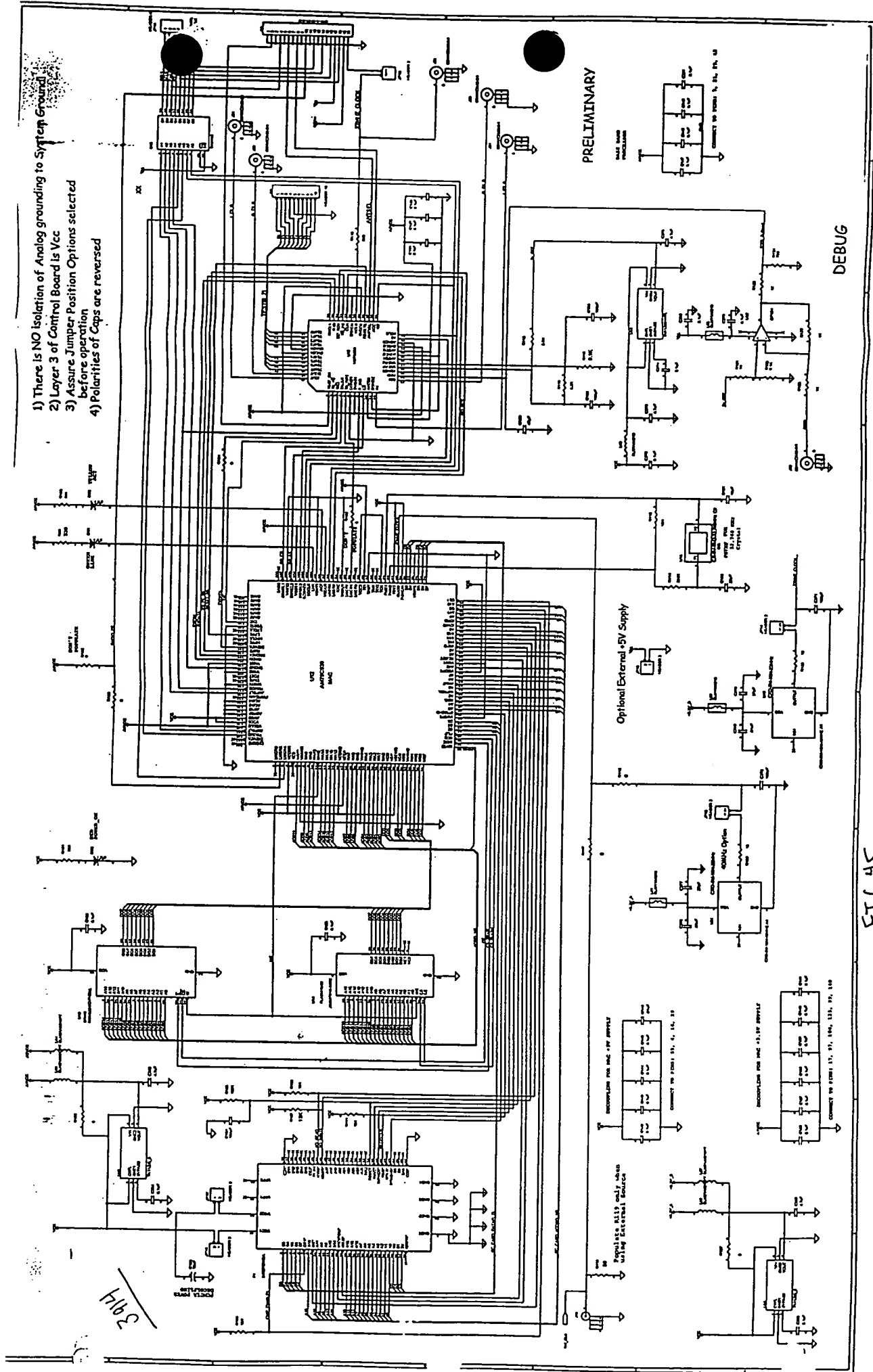


FIG. 45

PARK VISION PCMCIA CONTROLLER BOM

Item	Quantity	Reference	Part Description	Part Number	Manufacturer
1	1	C123	10uF CAP 6032, Tantalum,20%	TAJT106K010R	Kemet
2	3	C263, C273, C275, C282	4.7uF CAP 6032,Tantalum,20%	T491A475M006AS	Kemet
3	25	C120, C125, C126, C127, C128, C136, C137, C138, C139, C140, C141, C142, C143, C144, C145, C147, C148, C149, C264, C272, C274, C279, C280, C281, C283	0.1uF CAP 0603,X7R,10%	GRM39X7R104K050AD	Murata
4	3	C146, C269, C276	.01uF CAP 0603,X7R,10%	GRM39X7R103K050AD	Murata
5	5	C124, C132, C133, C271, C278	100pF CAP 0603,X7R,10%	GRM39COG101K050AD	Murata
6	1	C129	47pF CAP 0603,X7R,10%	GRM39COG470J100AD	Murata
7	2	C270, C277	27pF CAP 0603,X7R,10%	GRM39COG270K050AD	Murata
8	1	C130	22pF CAP 0603,X7R,10%	GRM39COG220K050AD	Murata
9	1	C131	10pF CAP 0603,X7R,10%	GRM39COG100D050AD	Murata
10	1	DS1	LED, Green	597-3311-420	Dialight
11	1	DS2	LED Yellow	597-3401-420	Dialight
12	1	DS3	LED Red	597-3111-420	Dialight
13	6	JP12, JP13, JP14, JP15, JP16, JP17	Connector HEADER 2Pin	2MS-19-33-01	Specialty Electronics
14	1	JP11	Connector HEADER 4Pin	100VH/TM1SQ/W.100/4	BLKCON
15	7	J16, J20, J21, J22, J23, J24, J25	Connector 82MMCX	82MMCX-50-0-1	Huber/Shuner
16	1	J18	Connector Header10	TMS-110-01-G-S	samtec
17	1	J19	Connector with Ejector	EHT-1-10-01-S-D	samtec
18	1	P1	Connector 34X2PCMCIA	DICMJ-68S-SPC-M08	ITT Canon
19	7	L59, L60, L61, L63, L64, L65, L66	Ferrite Bead	BLM11A121S	Murata
20	1	R112	10M, Resistor, 0603, 5%	ERJ-3GSYJ394V	Panasonic
21	1	R114	390K, Resistor, 0603, 5%	ERJ-3GSYJ104V	Panasonic
22	1	R105	100K, Resistor, 0603, 5%	ERJ-3GSYJ153V	Panasonic
23	4	R106, R107, R108, R111	15K, Resistor, 0603, 5%	ERJ-3GSYJ912V	Panasonic
24	1	R116	9.1K, Resistor, 0603, 5%	ERJ-3GSYJ822V	Panasonic
25	1	R115	8.2K, Resistor, 0603, 5%	ERJ-3GSYJ392V	Panasonic
26	1	R113	3.9K, Resistor, 0603, 5%	ERJ-3GSYJ751V	Panasonic
27	1	R101	750, Resistor, 0603, 5%	ERJ-3GSYJ561V	Panasonic
28	1	R110	560, Resistor, 0603, 5%	ERJ-3GSYJ331V	Panasonic
29	1	R99, R100	330, Resistor, 0603, 5%	ERJ-3GSYJ331V	Panasonic
30	2				

FIG. 46A

31	1	R119	50, Resistor, 0603, f	ERJ-3GSYJ500V	Panasonic
32	2	R128, R129	10, Resistor, 0603, 5...	ERJ-3GSYJ100V	Panasonic
33	8	R102, R103, R104, R109, R117, R118, R120, R127	0, Resistor, 0603, 5%	RM732Z1J000ZT	ERJ-KOA
34	6	R121, R122, R123, R124, R125, R126	TBD, Resistor, 0603, 5%	3GSYJ000V	Panasonic
35	1	U10	SRAM	R	Panasonic
36	1	U12	MAC	KM62256DLTG-5L	Samsung
37	1	U13	Baseband Processor	M5M5256CVP-55LL	Mitsubishi
38	1	U14	FLASH RAM	AM79C930	AMD
39	1	U15	32 KHz Crystal	HFA3842 A1	Harris
40	2	U45	Bus Buffer	AM29F010-55EC	AMD
41	1	U48	Regulator 3.5 V	CX-6V-SM2-32.768KHz C/I	Statek
42	1	U49	22MHz Oscillator	DS3862	National
43	1	U50	2 Volt Reference	TK11235BMC	TOKO
44	1	U51	40MHz Oscillator	FOX F3346-22MHz	FOX
				TK11220BMC	TOKO
				CXO-M-10N-40MHz A/I	Statek

FIG. 46B

39/2

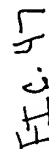


Fig. 47

004030-2582650

3012

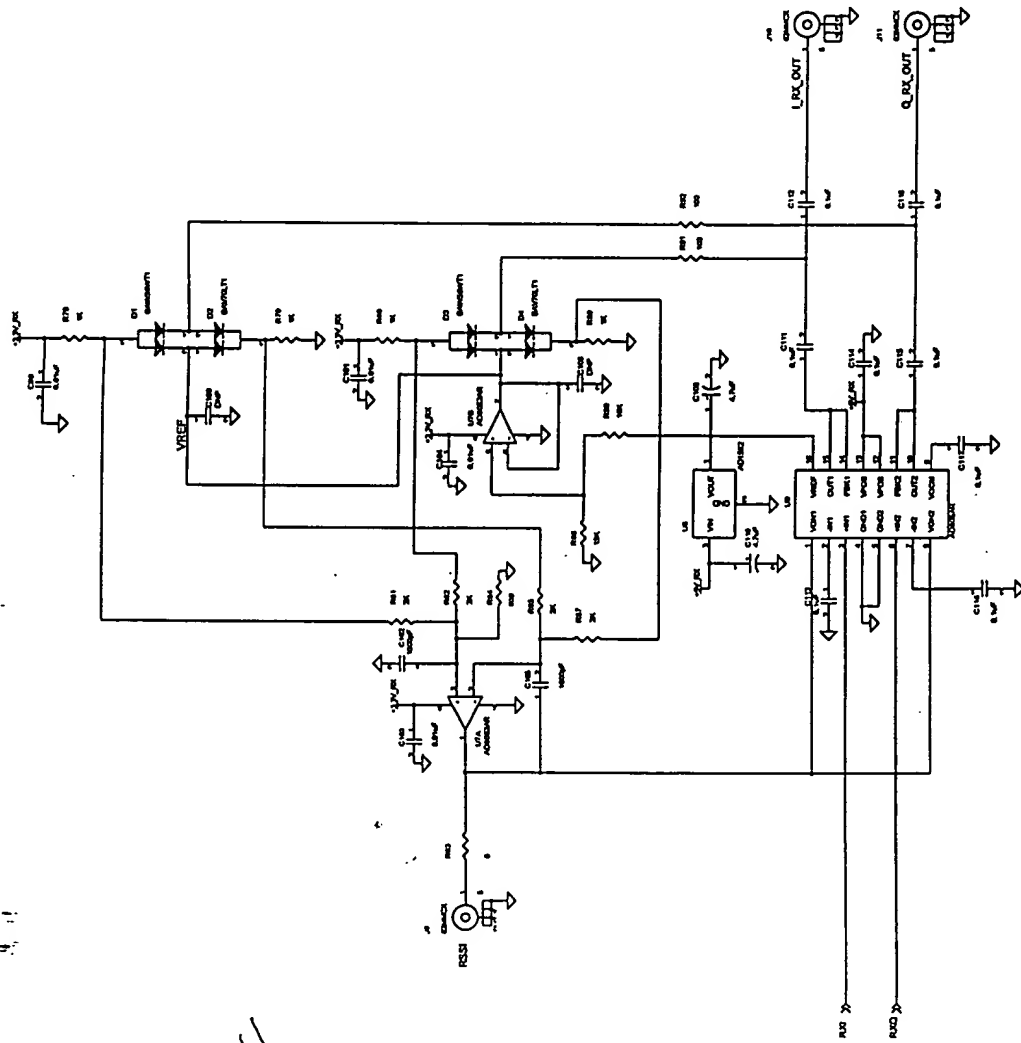


FIG. 48

July : Page1

Item	Quantity	Reference	Part	Part Number	Manufacturer
1	4	C3,C52,C108,C110	4.7uF	T491A475K006AS	KEMET
2	26	C51,C54,C57,C58,C60,C61, C67,C68,C69,C77,C79,C80, C81,C83,C89,C90,C91,C111, C112,C113,C114,C115,C116, C117,C118,C119	0.1uF	GRM39Y5V104Z016	Murata
3	1	C55	DNP	T491A475K006AS	KEMET
4	8	C56,C59,C78,C82,C99,C101, C103,C104	0.01uF	GRM39X7R103K050	Murata
5	8	C62,C63,C66,C73,C84,C85, C88,C95	1uF	GRM40Y5V105Z016	Murata
6	4	C64,C75,C86,C97	120pF	GRM39COG121J050	Murata
7	2	C65,C87	180pF	GRM39COG181J050	Murata
8	2	C70,C92	390pF	GRM39COG391J050	Murata
9	2	C71,C93	470pF	GRM39COG471J050	Murata
10	2	C72,C94	DNP	GRM40Y5V105Z016	Murata
11	2	C74,C96	82pF	GRM39COG820J050	Murata
12	2	C100,C106	DNP	DNP	Murata
13	2	C105,C102	1000pF	GRM39COG102K050	Murata
14	2	D3,D1	BAW56WT1	BAW56WT1	Motorola
15	2	D4,D2	BAV70LT1	BAV70LT1	Motorola
16	1	JP1	HEADER 7X2	FTSH-107-02-L-D	Samtec
17	9	J1,J3,J5,J7,J9,J10,J11, J12,J13	82MMCX	82MMCX-50-0-1	Suhner
18	1	L1	BLM11A121S	BLM11A121S	Murata
19	2	L23,L28	2.2uH	LQG21N2R2K10	Murata
20	2	L29,L24	1uH	LQG21N1R0K10	Murata
21	2	L30,L25	680nH	LQG21NR68K10	Murata
22	2	L26,L31	1.8uH	LQG21N1R8K10	Murata
23	2	L32,L27	390nH	LQG21NR39K10	Murata
24	4	Q1,Q5,Q10,Q14	SD404CY	SD404CY	Calogic
25	4	Q2,Q4,Q12,Q13	BFM505	BFM505	Philips
26	4	Q3,Q7,Q11,Q16	SD213	SD213	Calogic
27	2	Q17,Q8	BFR520	BFR520	Philips
28	4	R19,R20,R21,R83	0	ERJ3GSY0R00	Panasonic
29	8	R23,R26,R34,R45,R52,R57, R63,R74	33K	ERJ3GSYJ333	Panasonic
30	4	R24,R27,R53,R58	475	ERJ3EKF4750	Panasonic
31	6	R25,R28,R47,R54,R59,R76	402	ERJ3EKF4020	Panasonic
32	4	R29,R30,R55,R56	221	ERJ3EKF2210	Panasonic
33	2	R32,R61	200	ERJ3GSYJ201	Panasonic
34	2	R33,R62	33.2K	ERJ3GSYJ333	Panasonic
	4	R35,R46,R64,R75	68.1	ERJ3EKF68R1	Panasonic

FIG. 49A

36	2	R36,R65	200	ERJ3EKF2000	Panasonic
7	6	R37,R44,R66,R73,R171, R173	49.9	ERJ3EKF49R9	Panasonic
38	6	R40,R68,R78,R79,R80,R89	1K	ERJ3EKF1001	Panasonic
39	2	R42,R71	62	ERJ3GSYJ620	Panasonic
40	2	R43,R72	162	ERJ3EKF1620	Panasonic
41	2	R77,R48	DNP	ERJ3GSYJ330	Panasonic
42	4	R81,R82,R85,R87	2K	ERJ3EKF2001	Panasonic
43	1	R84	909	ERJ3EKF9090	Panasonic
44	1	R88	15K	ERJ3EKF1502	Panasonic
45	1	R90	10K	ERJ3EKF1002	Panasonic
46	2	R91,R92	100	ERJ3EKF1000	Panasonic
47	6	R164,R165,R166,R167,R168, R169	TBD		Panasonic
48	2	R170,R172	OPEN		Panasonic
49	6	TP1,TP2,TP3,TP4,TP5,TP6	TP-105-01-00		
50	2	U42,U6	NC7S04M5	NC7S04M5	National Semiconductor
51	1	U7	AD8052AR	AD8052AR	Analog Devices
52	1	U8	AD1582	AD1582	Analog Devices
53	1	U9	AD605AR	AD605AR	Analog Devices
54	1	U43	TK11235AMTL	TK11235BM	Toko

55

1

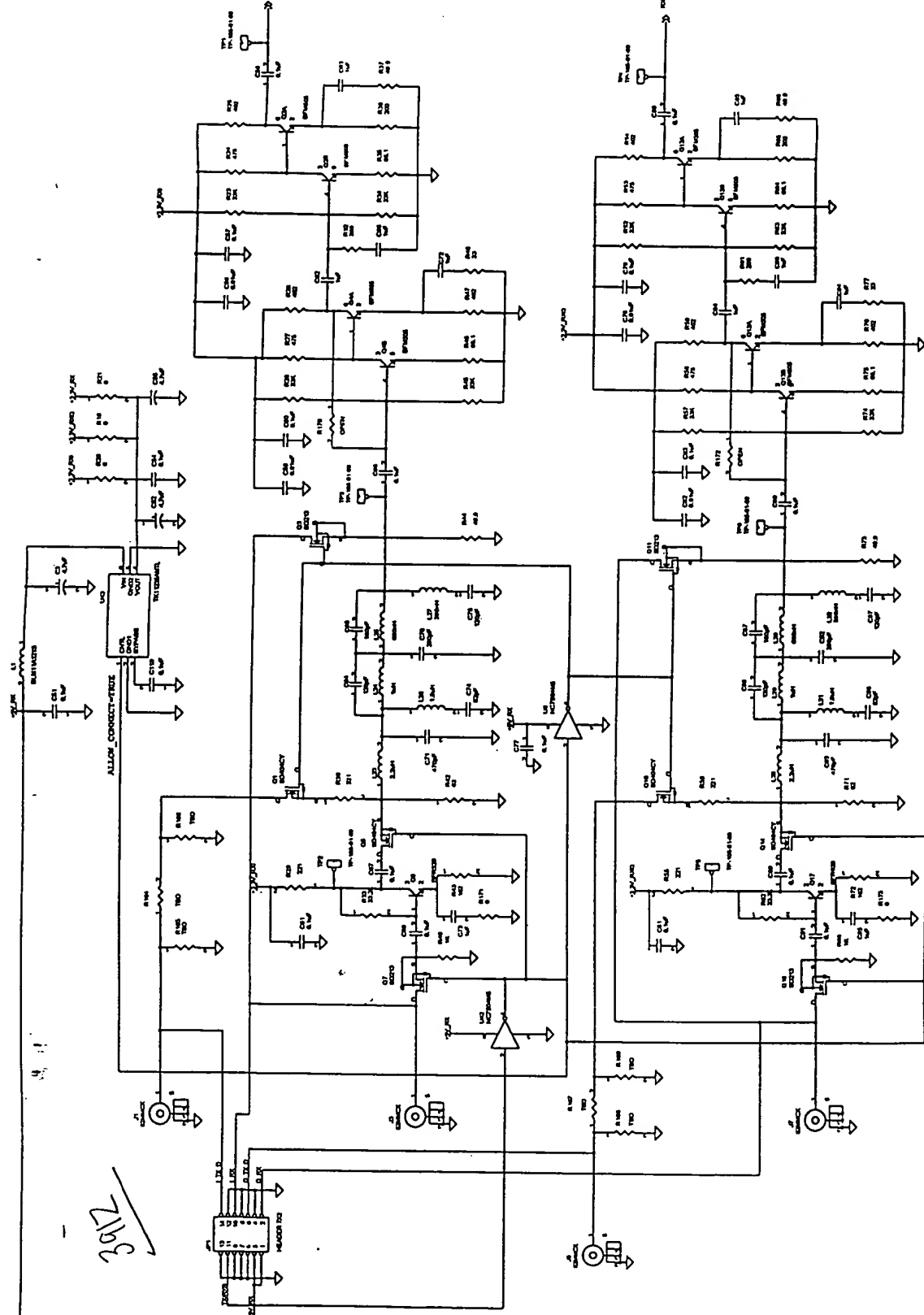
BOARD

8500.541.003 V13.01

FIG. 49B

004030-2532660

7/10/2



0044000 25822060

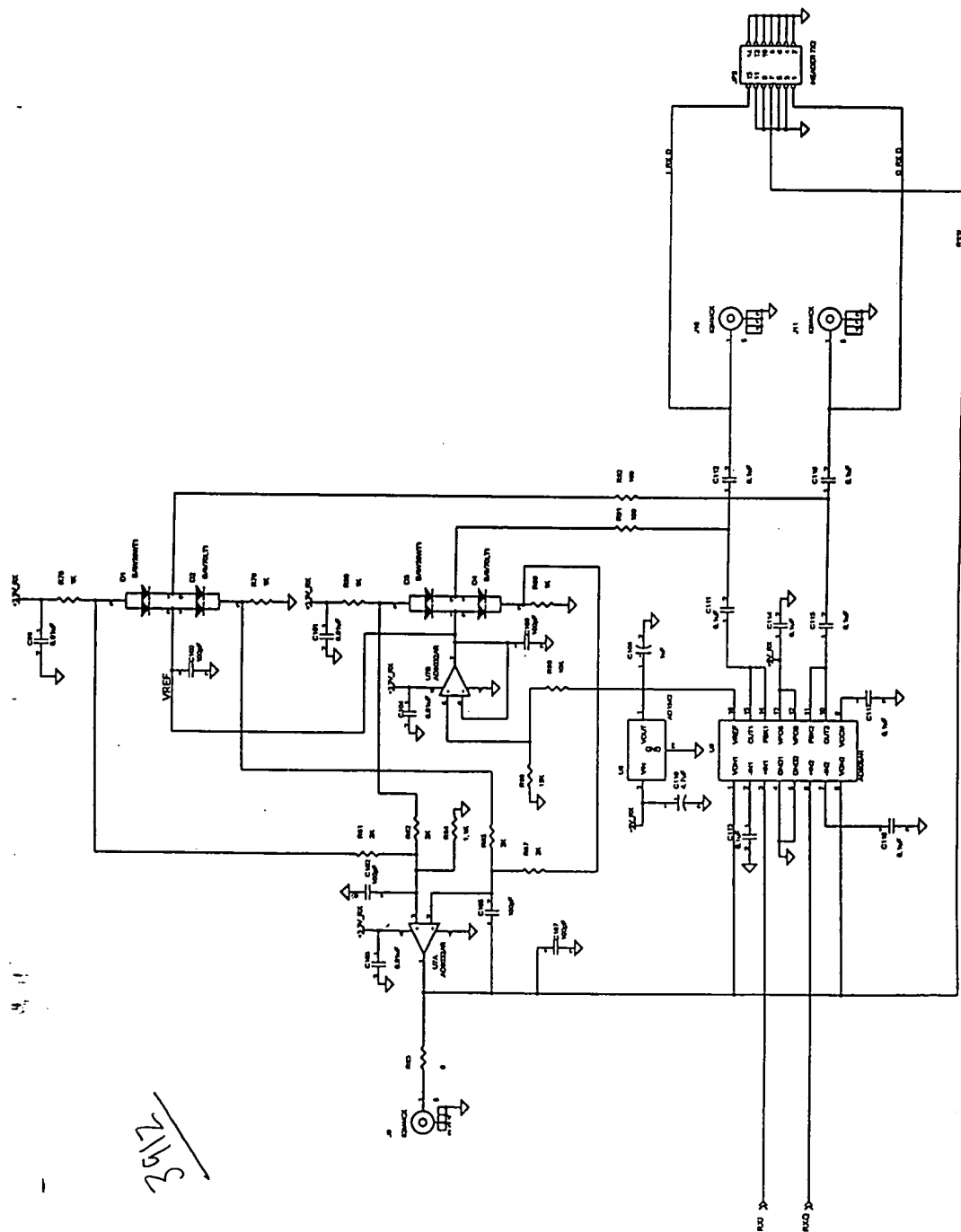


FIG. 51

Bill Of Materials

Item	Quantity	Reference	Part	Part Number	Manufacturer
1	3	C3,C52,C55	4.7uF	T491A475K006AS	KEMET
2	26	C51,C54,C57,C58,C60,C61, C67,C68,C69,C77,C79,C80, C81,C83,C89,C90,C91,C111, C112,C113,C114,C115,C116, C117,C118,C119	0.1uF	GRM39Y5V104Z016	Murata
3	8	C56,C59,C78,C82,C99,C101, C103,C104	0.01uF	GRM39X7R103K050	Murata
4	10	C62,C63,C66,C72,C73,C84, C85,C88,C94,C95	1uF	GRM40Y5V105Z016	Murata
5	4	C64,C75,C86,C97	120pF	GRM39COG121J050	Murata
6	2	C87,C65	180pF	GRM39COG181J050	Murata
7	2	C70,C92	390pF	GRM39COG391J050	Murata
8	2	C71,C93	470pF	GRM39COG471J050	Murata
9	2	C96,C74	82pF	GRM39COG820J050	Murata
10	5	C100,C102,C105,C106,C107	100pF	GRM39COG101K050	Murata
11	1	C108	1uF		
12	1	C110	4.7uF		
13	2	D3,D1	BAW56WT1	BAW56WT1	Motorola
14	2	D4,D2	BAV70LT1	BAV70LT1	Motorola
15	2	JP2,JP1	HEADER 7X2		
16	6	J1,J3,J5,J7,J10,J11	82MMCX	142-0701-231	Johnson
17	1	J9	82MMCX	82MMCX-50-0-1	Suhner
18	1	L1	BLM11A121S	BLM11A121S	Murata
19	2	L28,L23	2.2uH	LQG21N2R2K10	Murata
20	2	L24,L29	1uH	LQG21N1R0K10	Murata
21	2	L30,L25	680nH	LQG21NR68K10	Murata
22	2	L26,L31	1.8uH	LQG21N1R8K10	Murata
23	2	L27,L32	390nH	LQG21NR39K10	Murata
24	4	Q1,Q5,Q10,Q14	SD404CY	SD404CY	Calogic
25	4	Q2,Q4,Q12,Q13	BFM505	BFM505	Philips
26	4	Q3,Q7,Q11,Q16	SD213	SD213	Calogic
27	2	Q17,Q8	BFR520	BFR505	Philips
28	5	R19,R20,R21,R171,R173	0		
29	8	R23,R26,R34,R45,R52,R57, R63,R74	33K	ERJ3GSYJ333	Panasonic
30	4	R24,R27,R53,R58	475	ERJ3EKF4750	Panasonic
31	6	R25,R28,R47,R54,R59,R76	402	ERJ3EKF4020	Panasonic
32	4	R29,R30,R55,R56	221	ERJ3EKF2210	Panasonic
33	2	R32,R61	200	ERJ3GSYJ201	Panasonic
34	2	R33,R62	33.2K	ERJ3GSYJ333	Panasonic
	4	R35,R46,R64,R75	68.1	ERJ3EKF68R1	Panasonic
	2	R36,R65	200	ERJ3EKF2000	Panasonic

FIG. 52A

37	2	R66,R37	49.9	ERJ3EKF49R9	Panasonic
8	6	R40,R68,R78,R79,R80,R89	1K	ERJ3EKF1001	Panasonic
39	2	R42,R71	62	ERJ3GSYJ620	Panasonic
40	2	R43,R72	162	ERJ3EKF6810	Panasonic
41	2	R44,R73	49.9	ERJ3EKF1001	Panasonic
42	2	R77,R48	33	ERJ3GSYJ330	Panasonic
43	4	R81,R82,R85,R87	2K	ERJ3EKF2001	Panasonic
44	1	R83	0	ERJGSY0R00	Panasonic
45	1	R84	1.1K	ERJ3EKF2001	Panasonic
46	1	R88	15K	ERJ3EKF1502	Panasonic
47	1	R90	10K	ERJ3EKF1002	Panasonic
48	2	R91,R92	100	ERJ3EKF1000	Panasonic
49	6	R164,R165,R166,R167,R168, R169	TBD		
50	2	R170,R172	OPEN		
51	6	TP1,TP2,TP3,TP4,TP5,TP6	TP-105-01-00		
52	2	U42,U6	NC7S04M5		National Semiconductor
53	1	U7	AD8032AR	AD8032AR	Analog Devices
54	1	U8	AD1582	AD1582	Analog Devices
55	1	U9	AD605AR	AD605AR	Analog Devices
56	1	U43	TK11235AMTL	TK11235AMTL	Toko

FIG. 52B

[illegible]

FIG. 53

Item	Quantity	Reference	Part	Part Number	Manufacturer
1	10	C/R7,C/R15,C16,C17,C18, C19,C21,C22,C23,C24	0.1uF	GRM39Y5V104Z016	Murata
2	6	C1,C3,C6,C8,C9,C12	22pF	GRM39COG220J050	Murata
3	3	C2,C4,C11	0.1uF	GRM39X7R104K016	Murata
4	2	C5,C15	47pF	GRM39COG470J050	Murata
5	2	C10,C7	1000pF	GRM39X7R102K050	Murata
6	1	C13	100pF	GRM39X7R101J050	Murata
7	1	C14	3pF	GRM40COG030B50V	Murata
8	2	C20,C25	1uF	GRM40Y5V105Z016	Murata
9	1	JP1	69190-403	69190-403	BERG
10	1	JP2	69190-402	69190-402	BERG
11	4	J1,J2,J3,J4	82MMCX-50-0-1	82MMCX-50-0-1	Suhner
12	2	L3,L1	DNP	L	TOKO
13	2	L4,L2	4.7nH	LL1608-F4N7K	TOKO
14	1	L5	15nH	LL2012FH15NJ	TOKO
15	1	L6	DNP	DNP	TOKO
16	2	Q1,Q2	BFR520	BFR520	Philips
17	2	R1,R3	2K	ERJ3GSYJ202	Panasonic
18	1	R2	51	ERJ3GSYJ510	Panasonic
19	2	R4,R12	221	ERJ3EKF2210	Panasonic
20	6	R5,R6,R8,R13,R14,R16	33.2K	ERJ3EKF3322	Panasonic
21	2	R9,R17	DNP	ERJ3EKF1001	Panasonic
22	2	R10,R18	249	ERJ3EKF2490	Panasonic
23	2	R11,R19	10	ERJ3GSYJ100	Panasonic
24	1	U1	D2D_V4	D2D_V4	Parker Vision
25	1	U2	1X603	1X603	Anaren
26	1	U3	AD8032AR	AD8032AR	Analog Devices

27 1

Base D ST8500 LA1.001 V03.00

FIG. 54

3908



Synthesizer		ST8500-532-008 V02.00		Revision: B	
Bill Of Materials					
Item	Qty	Reference	Part	Description	Manufacturer
1	1	CR1	BBY51-E6327	Diode, Varactor	Siemens
2	6	C1,C3,C5,C7,C9,C10	100pF	Capacitor, ceramic, 100pF, 10%, COG, 0603	Murata
3	2	C29,C2	0.1uF	Capacitor, ceramic, .1uF, 10%, X7R, 0603	Murata
4	3	C4,C8,C17	.01uF	Capacitor, ceramic, .01uF, 10%, X7R, 0603	Murata
5	1	C6	220pF	Capacitor, ceramic, 220pF, 5%, COG, 0603	Murata
6	1	C11	3.3pF	Capacitor, ceramic, 3.3pF, 5%, COG, 0603	Murata
7	1	C12	6.8pF	Capacitor, ceramic, 6.8pF, +/-25pF, COG, 0603	Murata
8	4	C13,C35,C36,C37	1000pF	Capacitor, ceramic, 1000pF, 10%, X7R, 0603	Murata
9	1	C14	1500pF	Capacitor, ceramic, 1500pF, 10%, X7R, 0603	Murata
10	1	C15	12pF	Capacitor, ceramic, 12pF, 5%, COG, 0603	Murata
11	1	C16	4700pF	Capacitor, ceramic, 4700pF, 10%, COG, 0603	Murata
12	2	C20,C18	22pF	Capacitor, ceramic, 22pF, 10%, COG, 0603	Murata
13	4	C22,C32,C33,C34	DNP	Capacitor, ceramic, . . . 0603	Murata
14	3	C23,C24,C27	4.7uF	Capacitor, tantalum, 4.7uF, 10%, 3216	Murata
15	2	R16,C31, R17	0 ohm	Resistor, zero ohm, 0603	Kemet
16	1	JP1	FTSH-110-02-F-D	Header, dual row 10x2, .050x.050	Panasonic
17	1	JP2	FTSH-105-02-F-D	Header, dual row 5x2, .050x.050	Samtec
18	1	JP3	TSW-104-08-T-S	Header, single row 4 pin, .100"	Samtec
19	2	J5,J6	82MMCX	RF Connector	Berg
20	1	L1	18nH	Inductor, 18nH, 10%, 0805	Suhner
21	1	L3	0 Ohm	Zero Ohm Jumper	Coilcraft
22	6	L4,L6,L9,L10,L11,L12	BLM11A121S	Ferrite Bead, 0603	KOA
23	1	L14	82nH	Inductor, 82nH, 10%, 0805	Murata
24	1	Q1	BFR520	Transistor, NPN	Toko
25	5	R1,R2,R3,R11,R30	1K	Resistor, 1K, 5%, 0603	Philips
26	1	R4	10	Resistor, 10 ohm, 5%, 0603	Panasonic
27	1	R8	2K	Resistor, 2K, 5%, 0603	Panasonic
28	2	R9,R17	75	Resistor, 75 ohm, 5%, 0603	Panasonic
29	1	R10	3300	Resistor, 3.3K, 5%, 0603	Panasonic
30	1	R12	13K	Resistor, 13K, 5%, 0603	Panasonic
31	1	R13	1.5K	Resistor, 1.5K, 5%, 0603	Panasonic

ETC 510

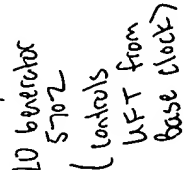
FIG. 56A

32	1	R14	220	Resistor, 220 ohm, 5%, 0603	ERJ3GSYJ221	Panasonic
33	1	R15	DNP	Resistor, zero ohm, 0603	ERJ3GSY0R00	Panasonic
34	2	R18,R19	DNP	Resistor, 91 ohm, 5%, 0603	ERJ3GSYJ910	Panasonic
35	1	R36	TBD	Resistor, zero ohm, 0603	ERJ3GSY0R00	Panasonic
36	1	R37	DNP	Resistor, . . , 0603		Panasonic
37	1	TP1	Test Point			Panasonic
38	1	U1	PE3282A	IC, Synthesizer	PE3282A	Peregrine
39	1	U2	CXO-3M-10N-40MHz	Xtal Osc, 40MHz	CXO-3M-10N-40MHZ A/I	Statek
40	1	U4	TK11233AMTL	Voltage Regulator, 3.5V	TK11235BM	Toko
41	1	U5	74125	IC, BUFFER	MC74LCX125DT	Motorola
42	1	U6	UPC1678GV	IC, RF Amplifier	UPC1678GV	NEC
43	1		570500.641.008	Board		

V02.00

FIG. 56B

Transmitter
3910



FTb.57

Data Conditioning
Interfacing 580Z
(Buffers)

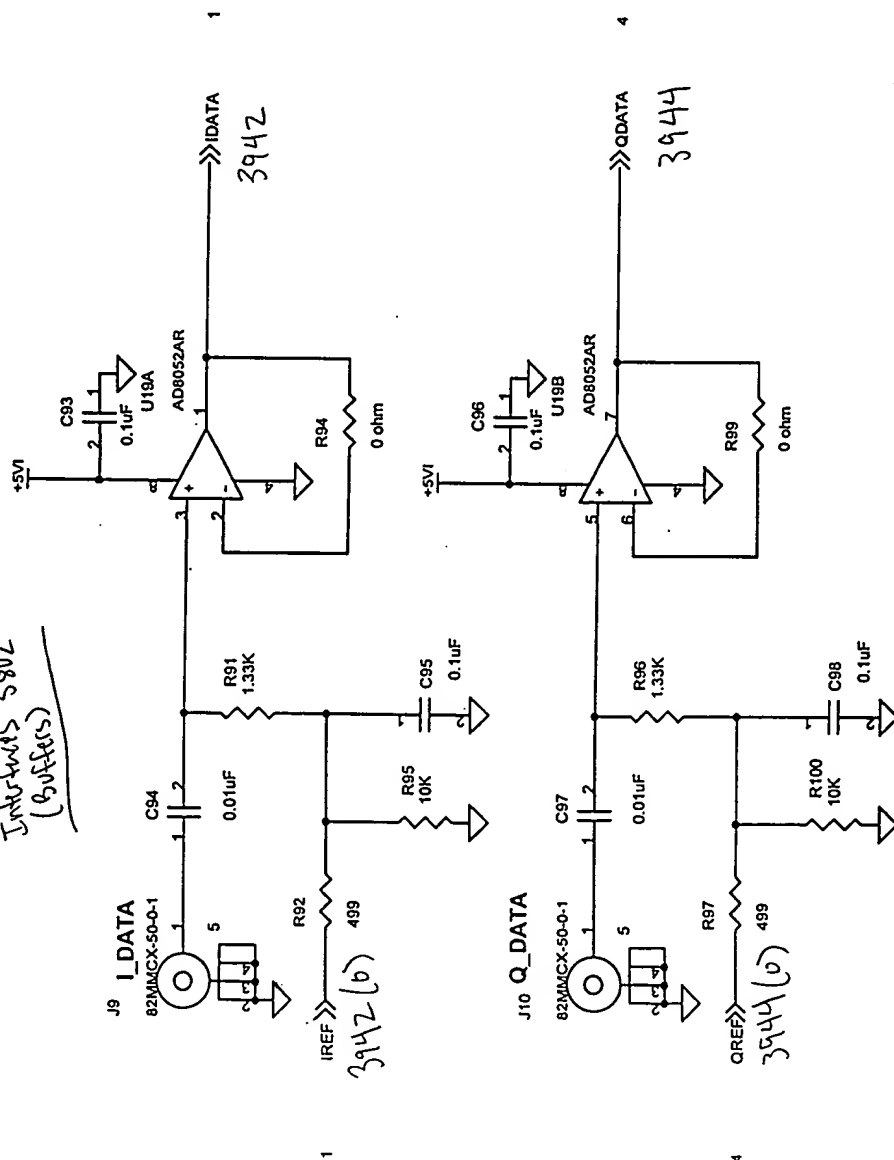
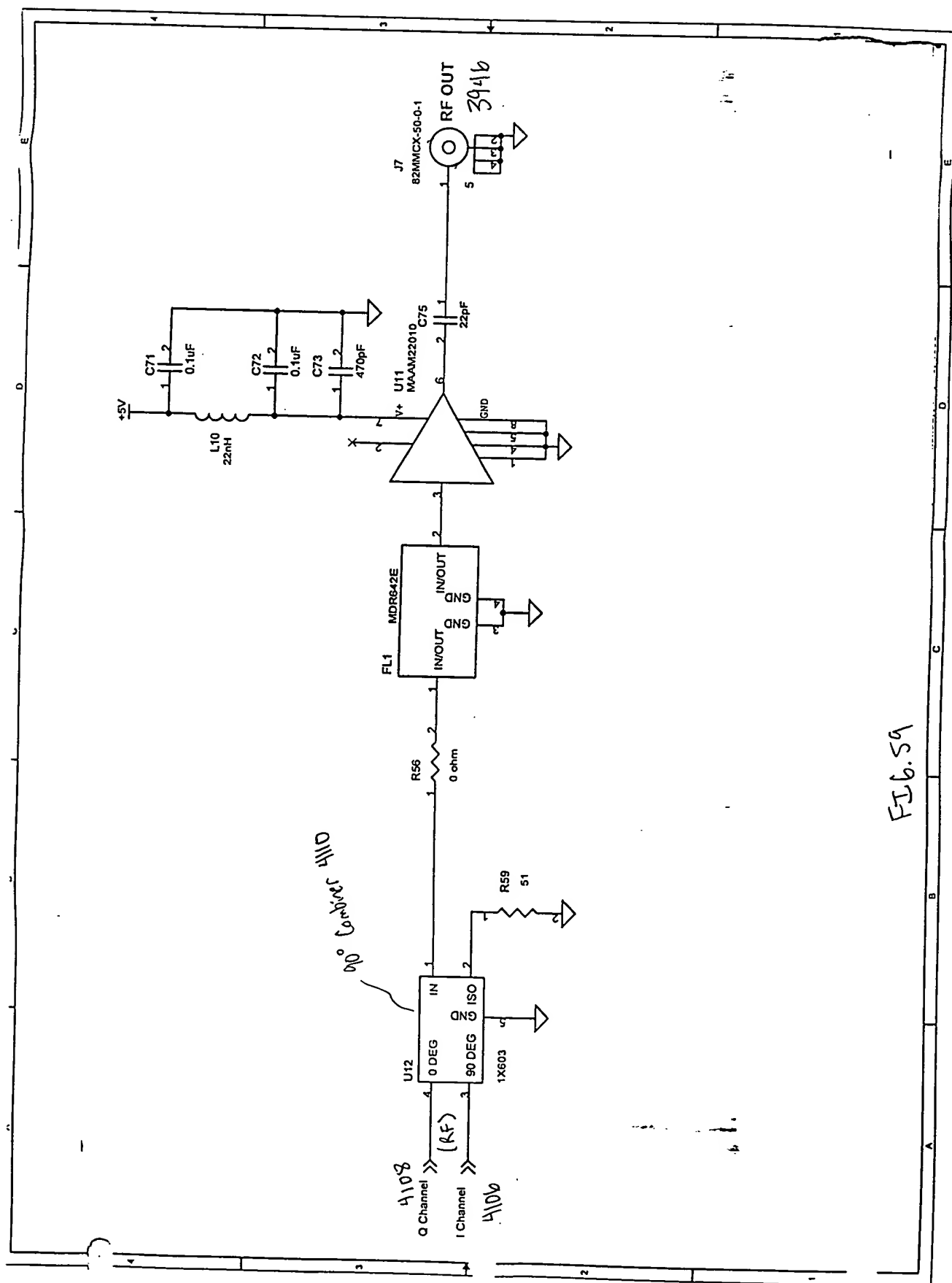


FIG. 58

2025



FT6.59

only after the only way you can see
the way out of the hole is by
digging down into it. In that case, the
only way out is by digging down.

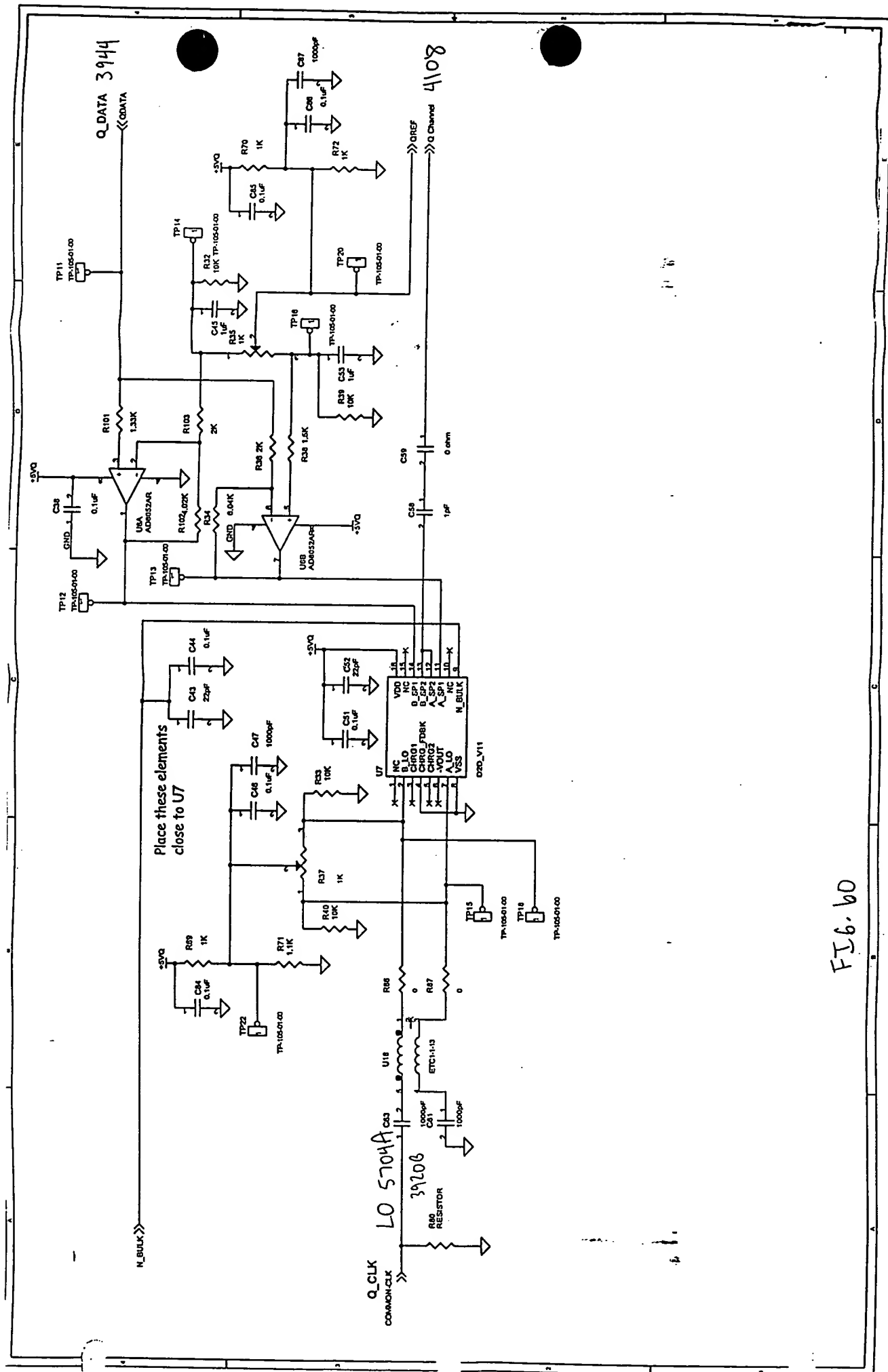


FIG. 60

Bill Of Materials

Item	Quantity	Reference	Part	Part Number	Manufacturer
1	21	C3,C6,C8,C10,C14,C38,C44, C46,C51,C71,C72,C77,C78, C79,C84,C85,C86,C93,C95, C96,C98	0.1uF	GRM39X7R104K016	Murata
2	6	C5,C7,C15,C43,C52,C75	22pF	GRM39COG220J050	Murata
3	5	C9,C16,C45,C53,C89	1uF	GRM40Y5V105Z016	Murata
4	8	C11,C23,C25,C47,C61,C63, C80,C87	1000pF	GRM39X7R102K050	Murata
5	2	C58,C21	1pF	GRM39COG010B50V	Murata
6	2	C82,C33	4.7uF	T491A475K006AS	KEMET
7	2	C59,C35	0 ohm	GRM39COGxxx50V	Murata
8	1	C73	470pF	GRM39COG471J050	Murata
9	1	C83	1uF	T491A105M016AS	Kemet
10	3	C90,C91,C92	100pF	ECU-V1H101JCV	
11	2	C94,C97	0.01uF	GRM39X7R103K016	Murata
12	1	FL1	MDR642E	MDR642E	Soshin
13	1	JP1	Shunt	69190-402	BERG
14	1	JP2	69190-403	69190-403	BERG
15	4	J7,J8,J9,J10	82MMCX-50-0-1	82MMCX-50-0-1	Suhner
16	1	L10	22nH	LL1608-F22NK	Coilcraft
17	1	L12	BLM11A121S	BLM11A121S	Murata
18	1	L13	330nH	LL2012-FR33K	
19	10	R5,R6,R12,R13,R32,R33, R39,R40,R95,R100	10K	ERJ3EKF1002	Panasonic
20	2	R34,R7	6.04K	ERJ3EKF6041	Panasonic
21	4	R8,R10,R35,R37	1K	3224W-1-102	Boums
22	4	R9,R36,R90,R103	2K	ERJ3EKF2001	Panasonic
23	2	R38,R11	1.5K	ERJ3EKF1501	Panasonic
24	3	R56,R94,R99	0 ohm	ERJ3GSY0R00	Panasonic
25	1	R59	51	ERJ3GSYJ510	Panasonic
26	7	R60,R61,R62,R84,R85,R86, R87	0	ERJ3GSY0R00	Panasonic
27	6	R63,R64,R66,R69,R70,R72	1K	ERJ3EKF1001	Panasonic
28	2	R71,R65	1.1K	ERJ3EKF1101	Panasonic
29	2	R80,R79	RESISTOR		
30	3	R81,R82,R83	R		
31	4	R88,R91,R96,R101	1.33K	ERJ3EKF1331	Panasonic
32	2	R102,R89	4.02K	ERJ3EKF4021	Panasonic
33	2	R92,R97	499	ERJ3EKF4990	Panasonic
34	19	TP1,TP2,TP3,TP4,TP5,TP6,	TP-105-01-00		

FIG. b1A

004030 " 45922E959

		TP8,TP9,TP11,TP12,TP13,			
		TP14,TP15,TP16,TP18,TP19,			
		TP20,TP21,TP22			
35	3	U1,U6,U19	AD8052AR	AD8052AR	Analog Devices
36	2	U7,U2	D2D_V11	D2D_V11	Parker Vision
37	1	U11	MAAM22010	MAAM22010	MACOM
38	1	U12	1X603	1X603	Anaren
39	1	U14	AD1582	AD1582	Analog Devices
40	1	U15	UPG1678	UPG1678GV	NEC
41	1	U16	ADP-2-10-75	ADP-2-10-75	Mini-Circuits

Board

B500.641.021 V05.10

FIG. 61B

TX_D2D
850000xx Module
4206

Demodulator
8500003K Module
4204

Receive D2D
8500001C Module
4210

From PCMCIA Connector Ribbon

TX_D2D
850000xx Module
4206

LNPA/PA
8500002c Module
4212

Synthesizer
8500008B Module
4208

To Transmitt
Module

To Receive
Module

Debug

FIG. 62

MOTHER BOARD FOR PCMCIA TEST BED

MOTHER BOARD FOR PCMCIA TEST BED

PCMCIA TEST BED						
ST8500-532-023 V01.01			Revision: A			
Bill Of Materials						
Item	Qty	Reference	Part	Description	Part Number	Vendor
1	4	C1,C6,C7,C10	1uF	Cap, 1uF, +80-20%, 0805	GRM40Y5V105Z016AD	Murata
2	6	C2,C3,C4,C8,C11,C12	100pF	Cap, 100pF, 5%, COG, 0603	ECU-V1H101JCV	Panasonic
3	2	C5,C9	.1uF	Cap, .1uF, +80-20%, Y5V, 0603		Murata
4	3	C13,C14,C19	22uF	Cap, Tant, 22uF, 20%, 20V	T491D226M020AS	Kemet
5	4	C15,C16,C17,C18	4.7uF	Cap, Tant, 4.7uF, 20%, 20V	T491C475M020AS	Kemet
6	2	JP2,JP6	HEADER 7X2	Receptacle, 7x2pin, .050	SFMC-107-L1-S-D	Samtek
7	9	JP4, J4, J5, J6, J7, JP9, J9, J10, JP11	CON3	Header, 3pin, .100"	69190-403	Berg
8	1	JP7	HEADER 10X2	Receptacle, 10x2pin, .050	SFMC-110-L1-S-D	Samtek
9	1	JP8	HEADER 5X2	Receptacle, 5x2pin, .050	SFMC-105-L1-S-D	Samtek
10	1	J2	EHT-1-10-01-S-D	Header, ribbon, 10x2pin, 2mm	EHT-1-10-01-S-D	Samtek
11	3	J8,J11,J12	82MMCX-50-0-1	Connector, RF	82MMCX-50-0-1	Suhner
12	2	L3,L1	Ferrite Bead	Ferrite Bead, 0805	BLM21A121S	Murata
13	2	L4,L2	330nH	Ind, 330nH, 10%, 0805	LL2012-FR33K	Toko
14	1	R1	DNP	Res, 0603		Panasonic
15	2	R9,R2	91	Res, 91 Ohm, 5%, 0603	ERJ-3GSYJ910	Panasonic
16	2	R7,R3	240	Res, 240 Ohm, 5%, 0603	ERJ-3GSYJ241	Panasonic
17	4	R4,R5,R10,R11	82	Res, 82 Ohm, 5%, 0603	ERJ-3GSYJ820	Panasonic
18	2	R8,R6	5K	Var Res, 5K, 10%	3296W001502	Bourns
19	10	R12, R13, R14, R15, R16, R17, R18, R19, R20, R21	180	Res, 180 Ohm, 5%, 0603	ERJ-3GSYJ181	Panasonic
20	10	R22, R23, R24, R25, R26, R27, R28, R29, R30, R31	390	Res, 390 Ohm, 5%, 0603	ERJ-3GSYJ391	Panasonic
21	2	U5,U1	UPG1678	IC, RF Buffer	UPG1678GV	NEC
22	2	U4,U2	LM317	IC, Voltage Regulator	LM317T	National
23	1	U3	ADP-2-10-75	RF Splitter	ADP-2-10-75	MiniCircuits
24	1	U6	DS3862	IC, Buffer	DS3862WM	National

25

BaseD

ST8500. 641.023 V01.01

Fig. 63

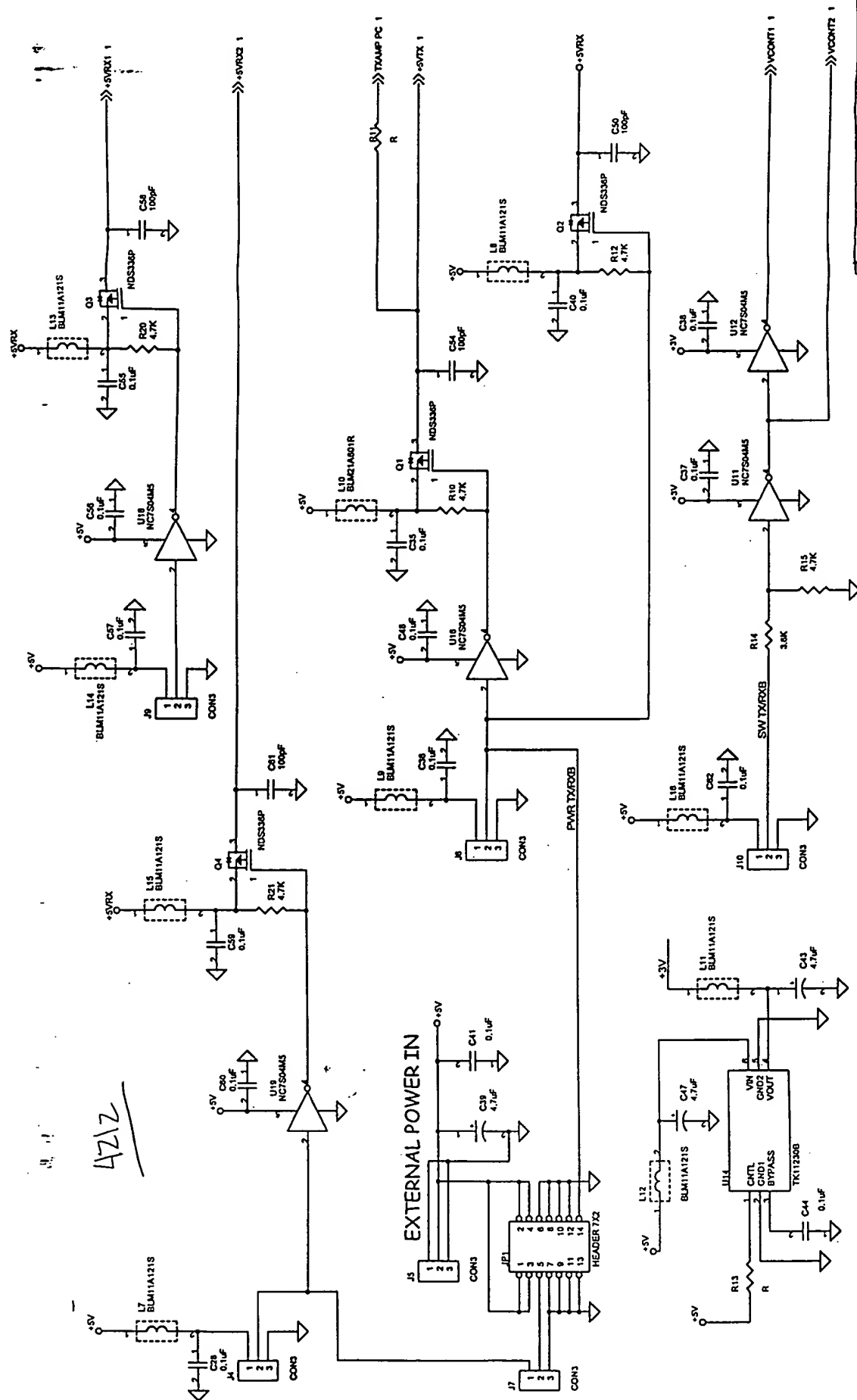


FIG. 66

Low-Noise Low Power 2.5 GHz Front End									
Revision: A									
Bill Of Materials									
Item	Qty	Reference	Part	Manufacturer	Part Description	Part Number			
1	24	C1,C2,C3,C5,C6,C17,C18, C19,C20,C28,C35,C36,C37, C38,C40,C41,C44,C48,C55, C56,C57,C59,C60,C62	0.1uF	Murata	.1uF,0603,X7R,20%,16V	GRM39X7R104MO16			
2	1	C4	330pF	Murata	330pF,0603,COG,10%,50	GRM39COG331K050			
3	2	C10,C7	22pF	Murata	22pF,0603,COG,10%,50	GRM39COG220K050			
4	4	C8,C9,C23,C24	470pF	Murata	470pF,0603,COG,10%,50	GRM39COG471K050			
5	6	C11,C13,C25,C26,C27,C48	10pF	Murata	10pF,0603,COG,10%,50	GRM39COG100K050			
6	1	C12	8pF	Murata	8pF,0603,COG,10%,50	GRM39COG080K050			
7	8	C15,C16,C21,C22,C50,C54, C58,C61	100pF	Murata	100pF,0603,COG,10%,50	GRM39COG101K050			
8	3	C39,C43,C47	4.7uF	Panasonic	4.7 uF tantalum, 16V	ECS-T1CY475R			
9	1	C52	33pF	Murata	330pF,0603,COG,10%,50	GRM39COG330K050			
10	2	FL1,FL2	MDR642E	Soshin	2.4-2.5GHz BPF	MDR642E			
11	1	JP1	HEADER 7X2	Samtec	Dual Row, 7 pins per row	FTSH-107-01-F-D			
12	3	J1,J2,J3	82MMCX-50-0-1	Suhner	RF Connector	82MMCX-50-0-1			
13	6	J4,J5,J6,J7,J9,J10	CON3	Berg	3 pin header w retentive leg	69190-403H			
14	2	L10,L1	BLM21A601R	Murata	600 ohms@100MHz, 500 mA Ferrite Bead	BLM21A601R			
15	4	L2,L3,L5,L6	22 nH	Coilcraft	22nH, 0805CS (2012), 5%	0805CS-220X-BC			
16	9	L7,L8,L9,L11,L12,L13,L14, L15,L16	BLM11A121S	Murata	RF Bead	BLM11A121S			
17	4	Q1,Q2,Q3,Q4	NDS336P	National	P-Channel FET	NDS336P			
18	12	R1,R2,R5,R6,R7,R9,R11, R13,R16,R17,R18,R19	R	Panasonic					
19	2	R3,R4	100	Panasonic	0603, 100, 5%, 1/16 W	ERJ-3GSY-J-101			
20	5	R10,R12,R15,R20,R21	4.7K	Panasonic	0603, 4.7K, 5%, 1/16 W	ERJ-3GSY-J-472			
21	1	R14	3.6K	Panasonic	0603, 3.6K, 5%, 1/16 W	ERJ-3GSY-J-362			
22	1	T1	80 ohm, L=100 mil, W=20 mil		80 ohm, L=100 mil, W=20 mil				
23	1	T2	50 ohm, L=100 mil, W=54 mil		50 ohm, L=100 mil, W=54 mil				
24	1	T3	102 ohm, L=220 mil, W=10 mil		102 ohm, L=220 mil, W=10 mil				
25	1	T4	67 ohm, L=200 mil, W=30.7 mil		67 ohm, L=200 mil, W=30.7 mil				
26	1	T5	100 ohm, L=200 mil, W=10.7 mil		100 ohm, L=200 mil, W=10.7 mil				
27	4	U2,U3,U6,U7	MAAM22010	MACOM	2.4-2.5 GHz LNA	MAAM22010			
28	1	U4	UPG152TA	NEC	RF Switch	UPG152TA			
29	5	U11,U12,U16,U18,U19	NC7S04M5	National	Inverter	NC7S04M5			
30	1	U14	TK11230B	TOKO	Voltage Regulator	TK11230B			
31	1	U17	RF2128P	RFMD	Medium Power Linear Amplifier	RF2128P			

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P: 8 pages
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8500.041.024 Vol.

004000-2582E950

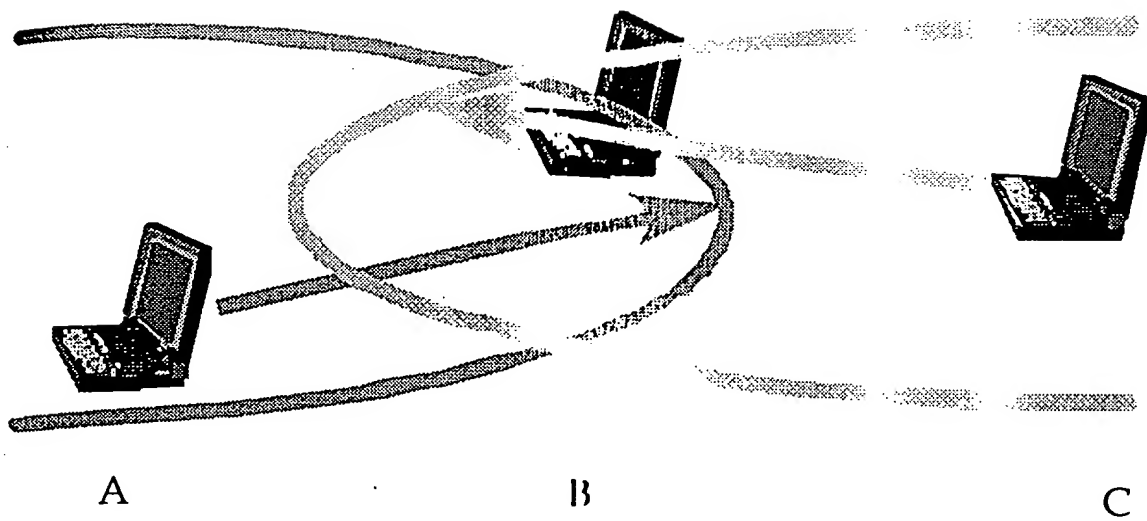


FIG. 67

Area cleared by RTS

CTS

RTS

Area cleared by CTS

FIG. 68

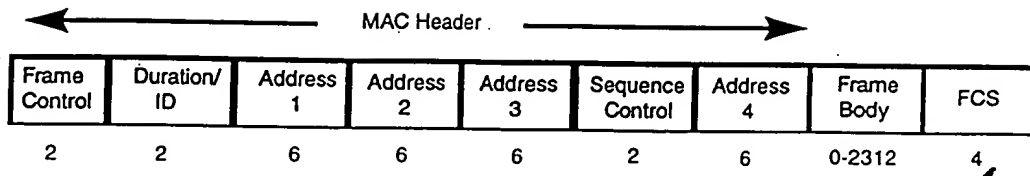


FIG. 69

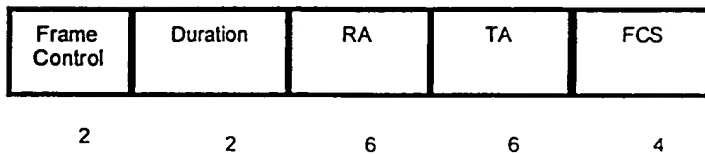
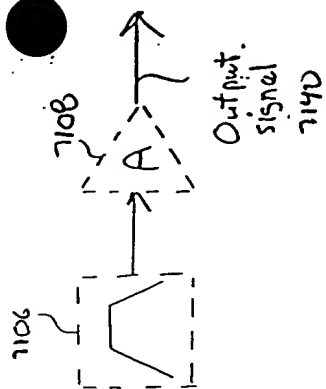
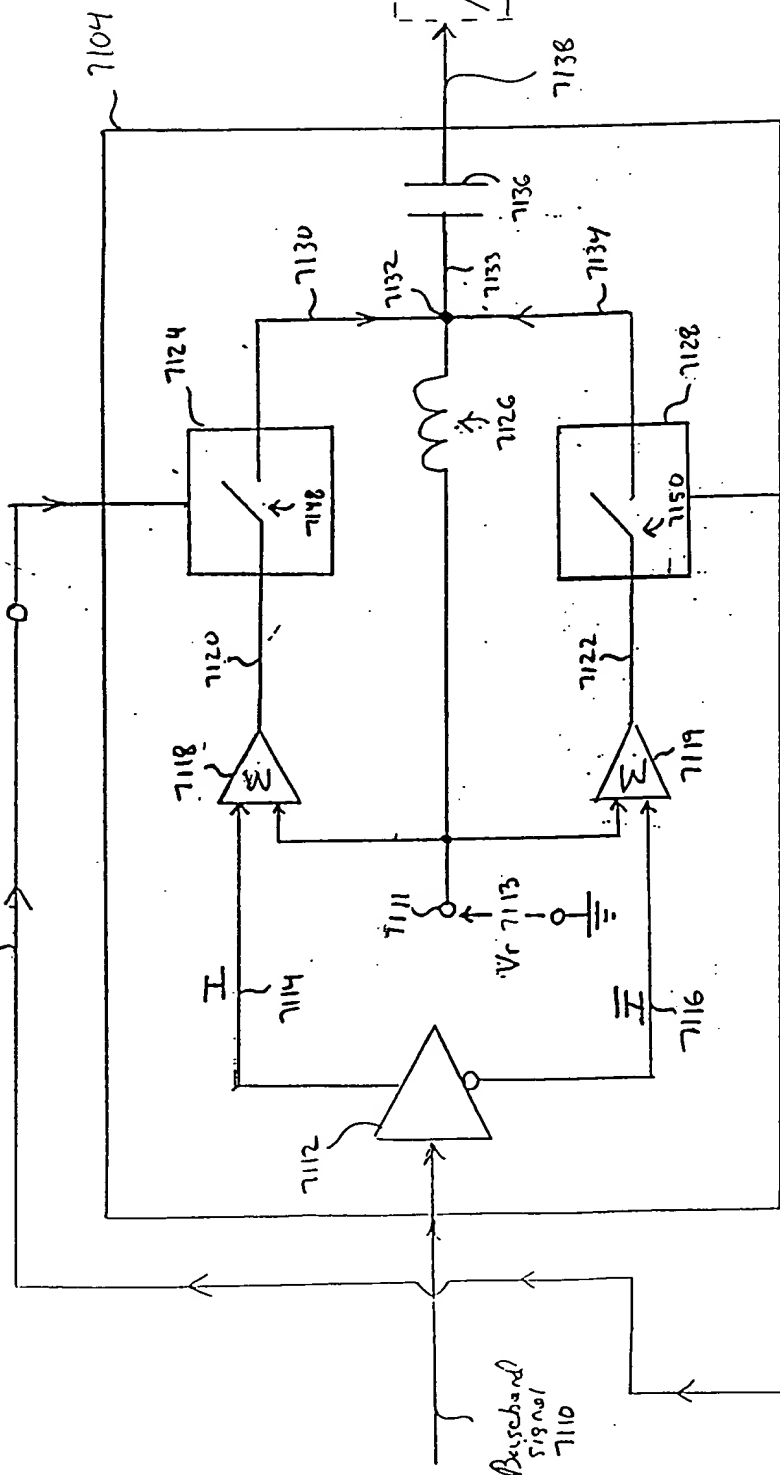
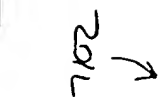


FIG. 70



1
FIG. 71A

004030" 23826350

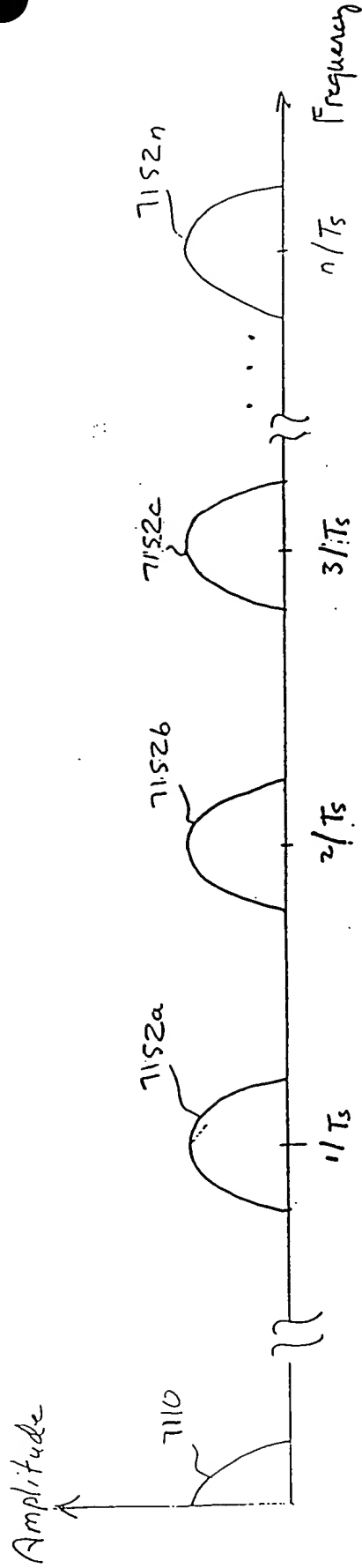


FIG. 71B

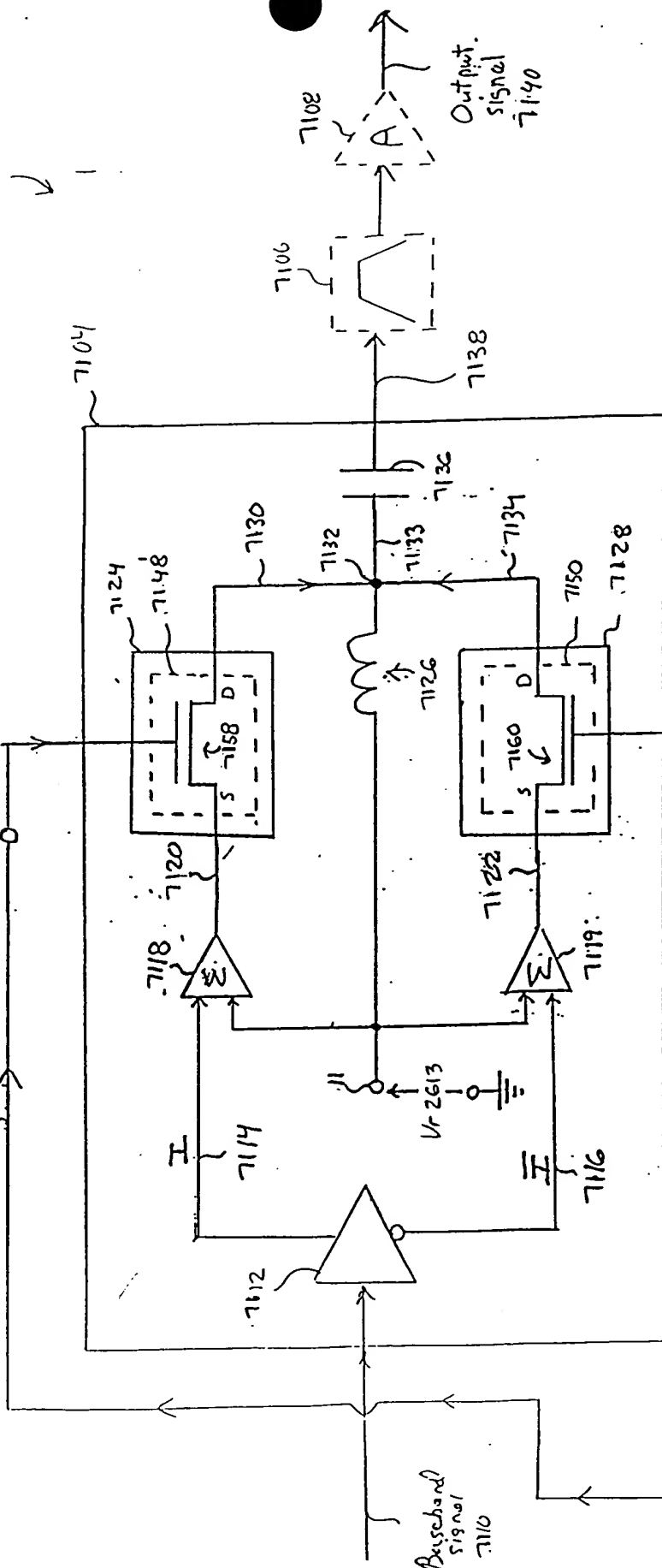
13,782 50 SHEETS, FILLED 3 SQUARE
42,381 50 SHEETS, EYE 2.5" 3 SQUARE
42,382 100 SHEETS, EYE 2.5" 3 SQUARE
42,383 100 SHEETS, EYE 2.5" 3 SQUARE
42,384 100 SHEETS, EYE 2.5" 3 SQUARE
42,385 100 SHEETS, EYE 2.5" 3 SQUARE
42,386 100 SHEETS, EYE 2.5" 3 SQUARE
42,387 100 SHEETS, EYE 2.5" 3 SQUARE
42,388 100 SHEETS, EYE 2.5" 3 SQUARE
42,389 100 SHEETS, EYE 2.5" 3 SQUARE
42,390 100 SHEETS, EYE 2.5" 3 SQUARE
42,391 100 SHEETS, EYE 2.5" 3 SQUARE
42,392 100 SHEETS, EYE 2.5" 3 SQUARE
42,393 100 SHEETS, EYE 2.5" 3 SQUARE
42,394 100 SHEETS, EYE 2.5" 3 SQUARE
42,395 100 SHEETS, EYE 2.5" 3 SQUARE
42,396 100 SHEETS, EYE 2.5" 3 SQUARE
42,397 100 SHEETS, EYE 2.5" 3 SQUARE
42,398 100 SHEETS, EYE 2.5" 3 SQUARE
42,399 100 SHEETS, EYE 2.5" 3 SQUARE
42,400 100 SHEETS, EYE 2.5" 3 SQUARE

Eastman National Brand

004030 25222960

CNTL
Signal 7123

7162



Reference
Signal
7110

Output
Signal
7140

CNTL
SW6L
7127

Pulse
Generator
7141a

Pulse
Generator
7141b

7143

7147

7146

7142

FIG. 71D

FIG. 72A

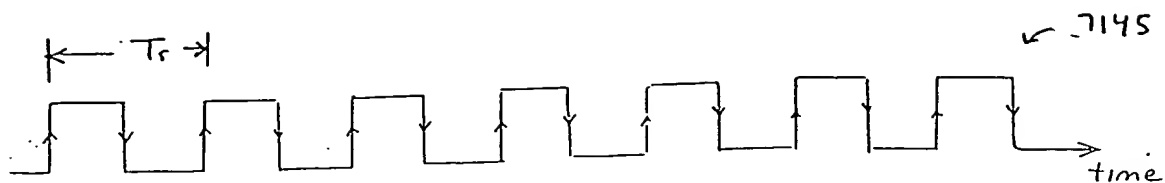


FIG. 72B

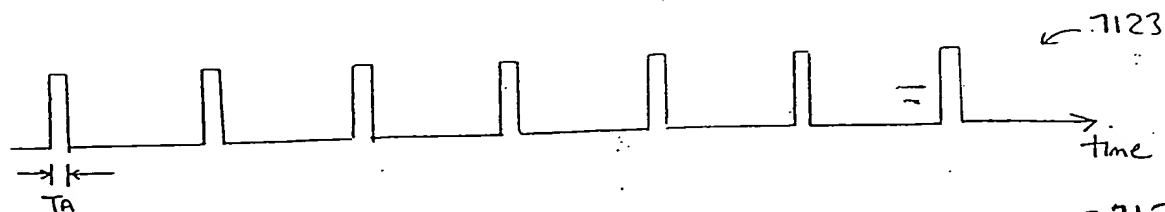


FIG. 72C

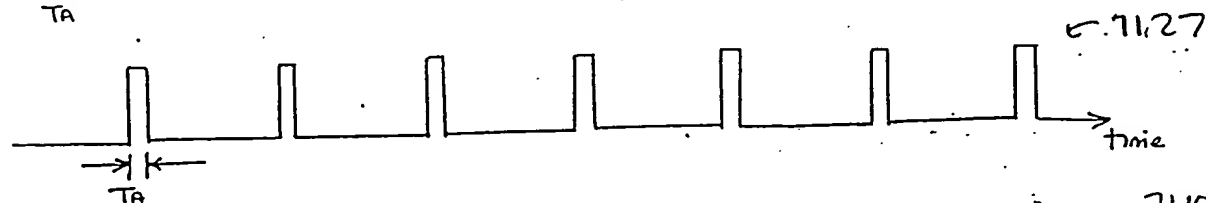


FIG. 72D

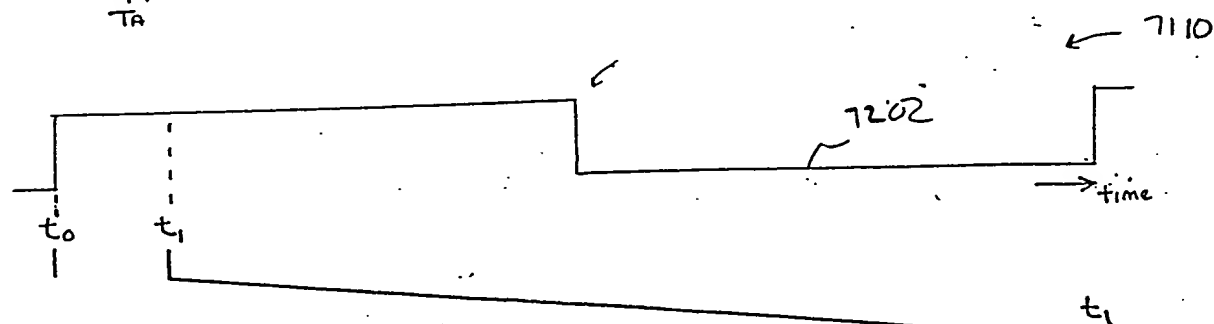


FIG. 72E

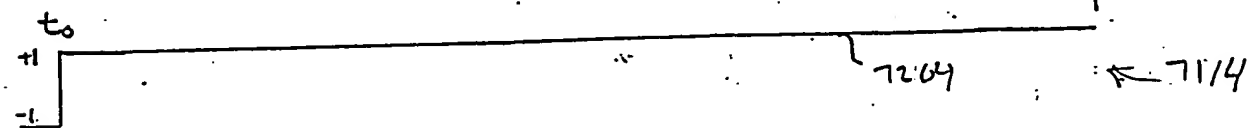


FIG. 72F

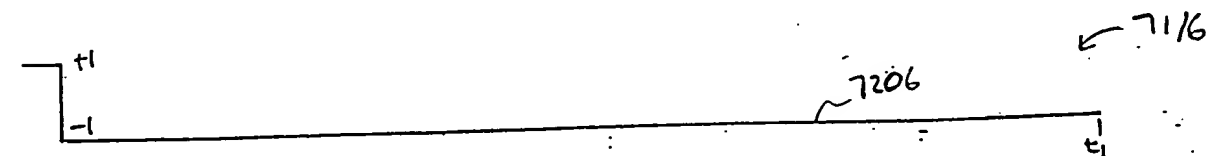


FIG. 72G

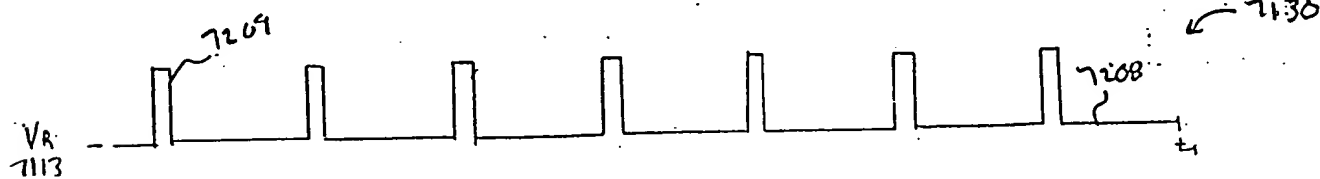


FIG. 72H

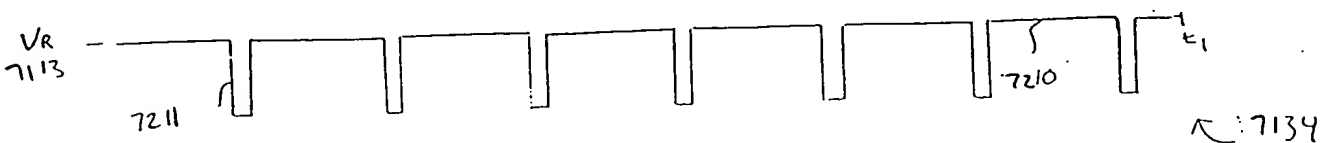
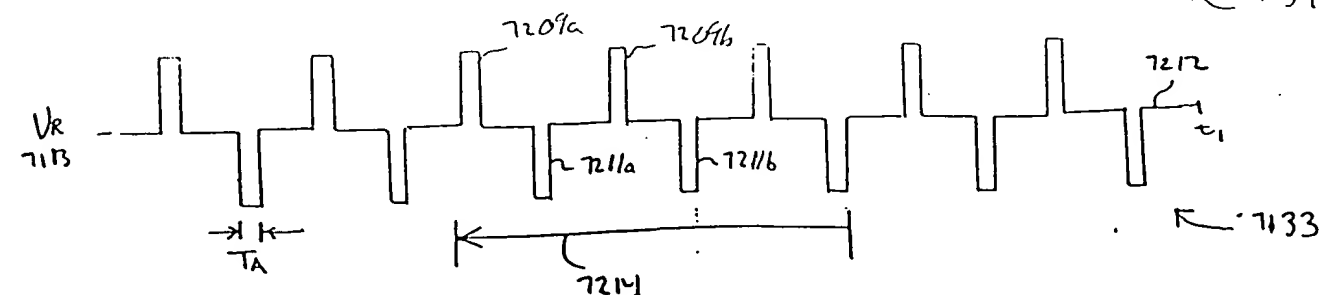


FIG. 72I



Aperture = 500ps

Fundamental Clock = 200Mhz (5th Subharmonic)

Square Wave Frequency = 200Mhz

1216

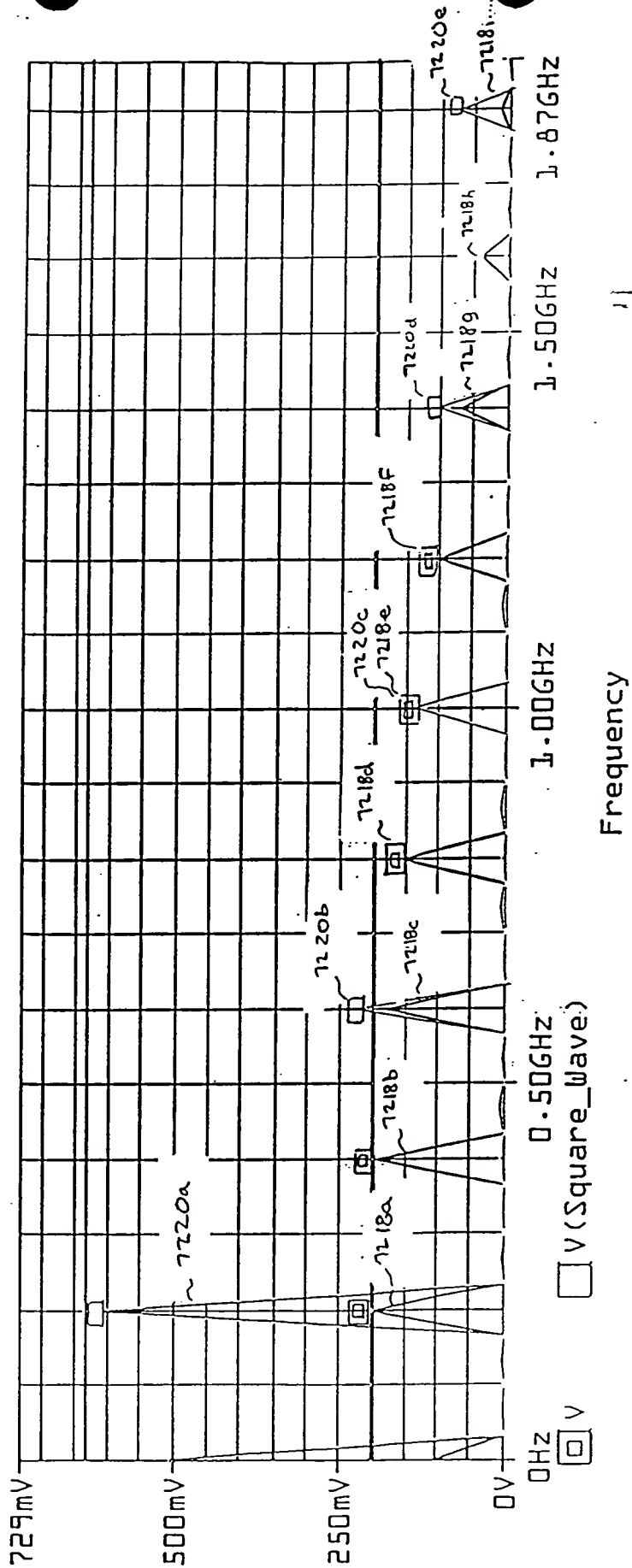


FIG. 725

2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814 2815 2816 2817 2818 2819 2

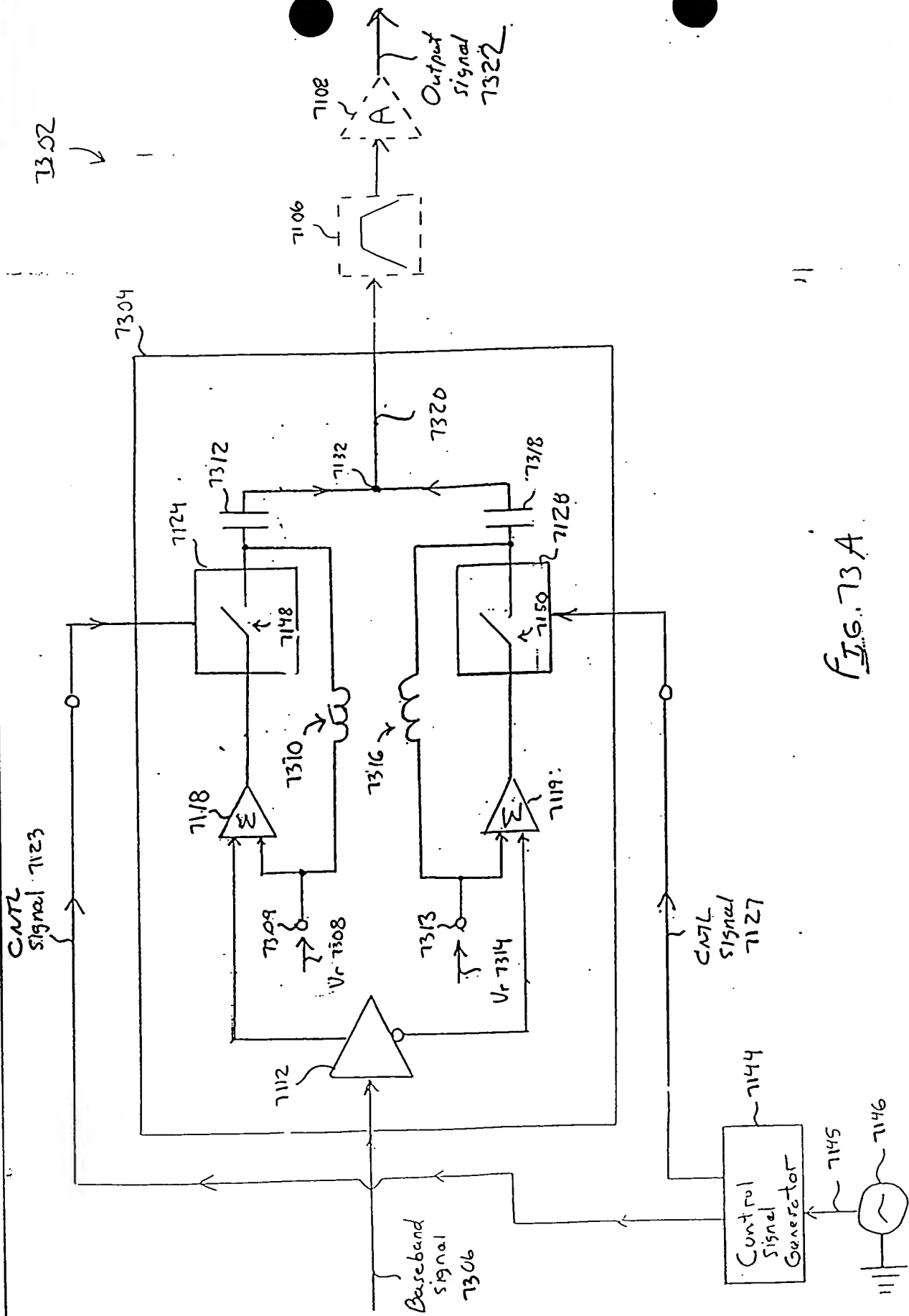


Fig. 73A

13-782 500 SHEET FULLER 3 SQUARE
 42-301 100 SHEET FULLER 3 SQUARE
 42-302 100 SHEET FULLER 3 SQUARE
 42-303 100 SHEET FULLER 3 SQUARE
 42-304 100 SHEET FULLER 3 SQUARE
 42-305 100 SHEET FULLER 3 SQUARE
 42-306 100 SHEET FULLER 3 SQUARE
 42-307 100 SHEET FULLER 3 SQUARE
 42-308 100 SHEET FULLER 3 SQUARE
 42-309 200 RECYCLED WHITE 3 SC

004000 2500000000 National Brand

1

7320

Amplitude

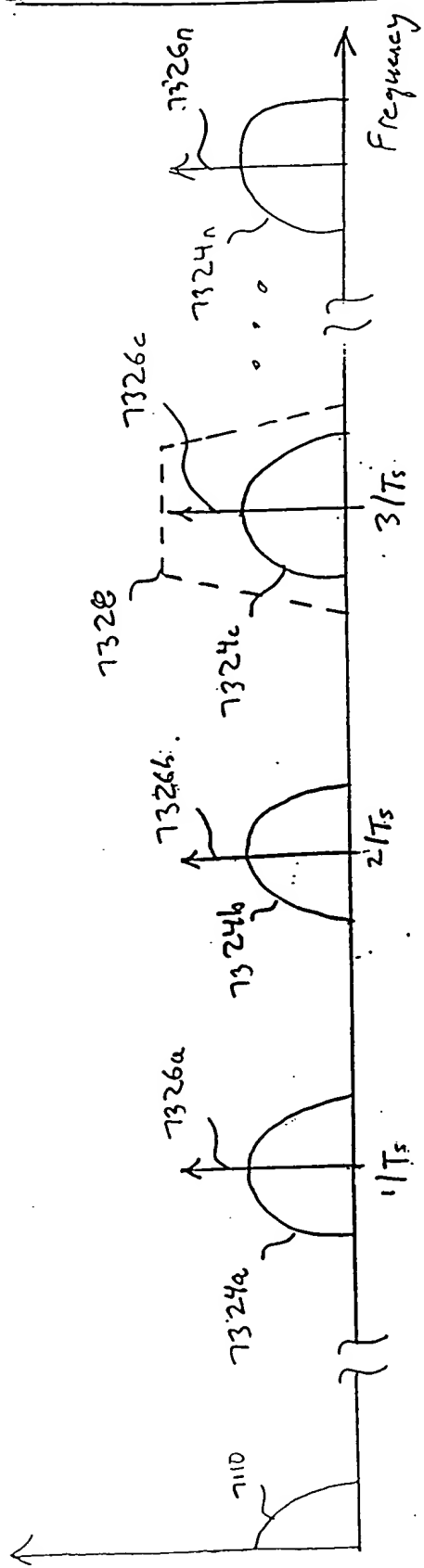


FIG. 73B

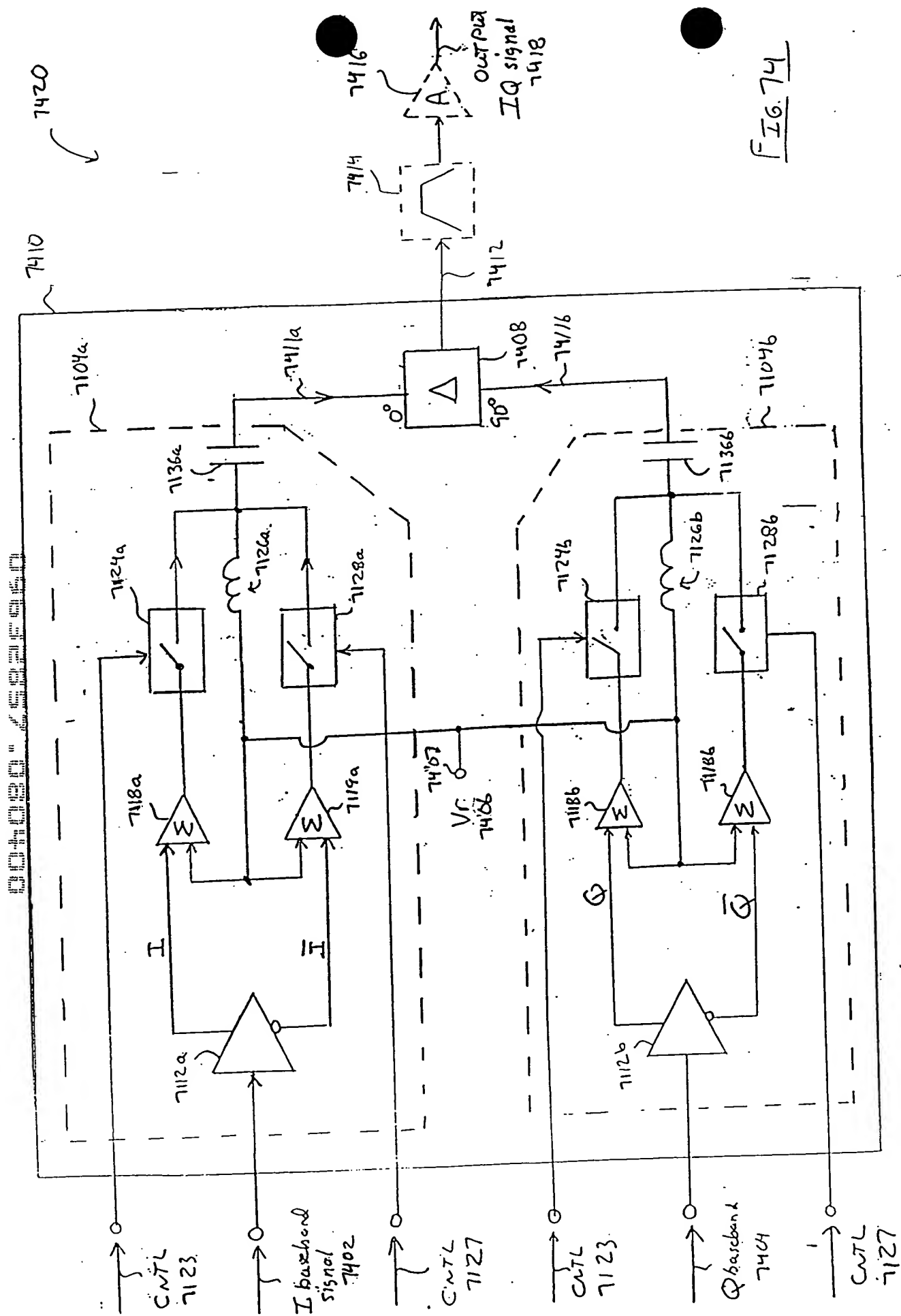


Fig. 74

00440000000000000000

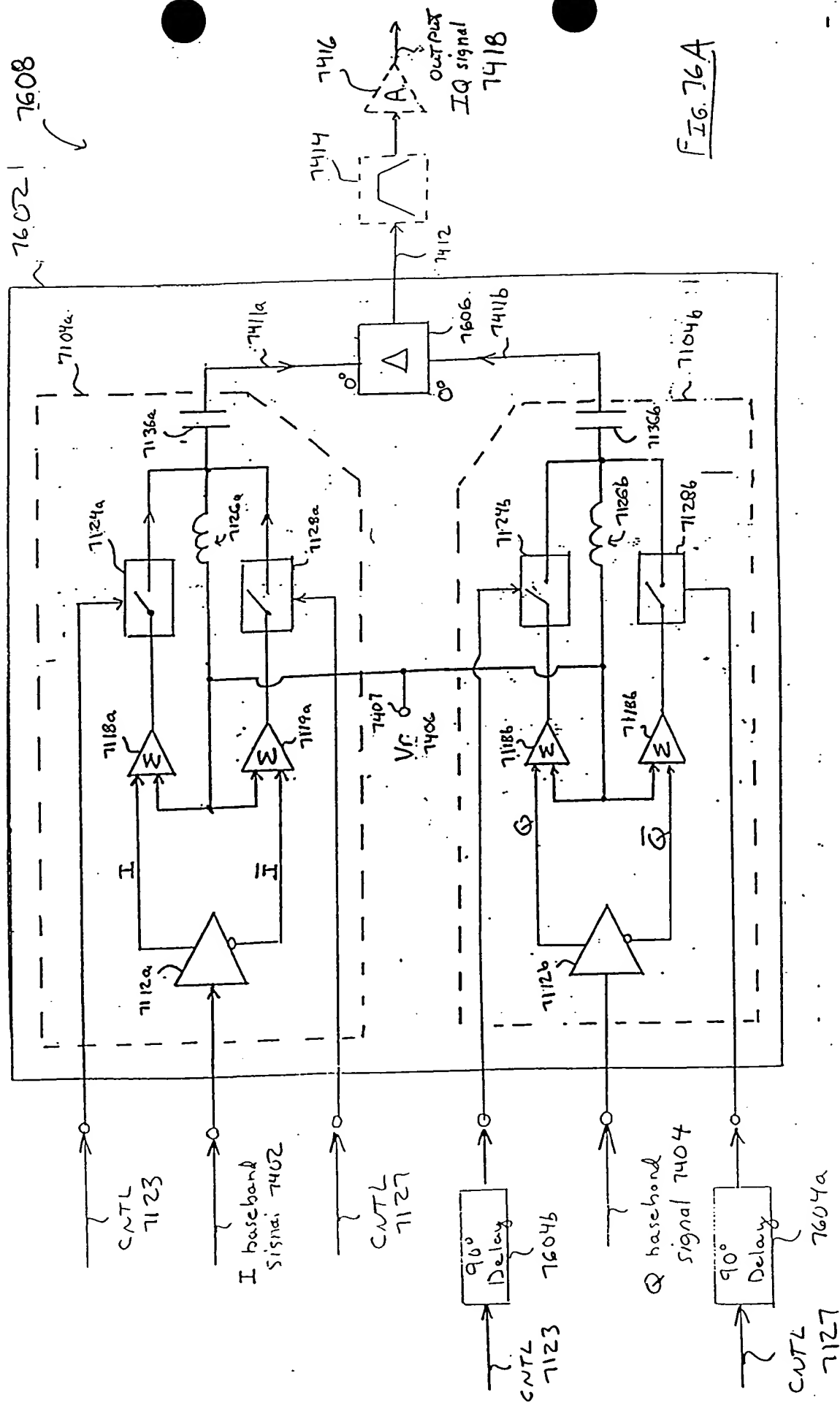


FIG. 76A

The diagram is a hand-drawn schematic of a 7418 IC, which is a 10-bit counter. The circuit is divided into two main sections by a dashed line, representing the internal structure of the chip. The top section contains the main counter logic, including a 7412a (NAND gate), a 7412b (NAND gate), and a 7412c (NAND gate). The bottom section contains the output drivers, including a 7412d (NAND gate), a 7412e (NAND gate), and a 7412f (NAND gate). The circuit is powered by a 7412g (NAND gate) and a 7412h (NAND gate). The output of the counter is connected to a 7412i (NAND gate) and a 7412j (NAND gate). The circuit is labeled with various components and pins, including 7412a, 7412b, 7412c, 7412d, 7412e, 7412f, 7412g, 7412h, 7412i, 7412j, 7412k, 7412l, 7412m, 7412n, 7412o, 7412p, 7412q, 7412r, 7412s, 7412t, 7412u, 7412v, 7412w, 7412x, 7412y, 7412z, 7412aa, 7412ab, 7412ac, 7412ad, 7412ae, 7412af, 7412ag, 7412ah, 7412ai, 7412aj, 7412ak, 7412al, 7412am, 7412an, 7412ao, 7412ap, 7412aq, 7412ar, 7412as, 7412at, 7412au, 7412av, 7412aw, 7412ax, 7412ay, 7412az, 7412ba, 7412bb, 7412bc, 7412bd, 7412be, 7412bf, 7412bg, 7412bh, 7412bi, 7412bj, 7412bk, 7412bl, 7412bm, 7412bn, 7412bo, 7412bp, 7412bq, 7412br, 7412bs, 7412bt, 7412bu, 7412bv, 7412bw, 7412bx, 7412by, 7412bz, 7412ca, 7412cb, 7412cc, 7412cd, 7412ce, 7412cf, 7412cg, 7412ch, 7412ci, 7412cj, 7412ck, 7412cl, 7412cm, 7412cn, 7412co, 7412cp, 7412cq, 7412cr, 7412cs, 7412ct, 7412cu, 7412cv, 7412cw, 7412cx, 7412cy, 7412cz, 7412da, 7412db, 7412dc, 7412dd, 7412de, 7412df, 7412dg, 7412dh, 7412di, 7412dj, 7412dk, 7412dl, 7412dm, 7412dn, 7412do, 7412dp, 7412dq, 7412dr, 7412ds, 7412dt, 7412du, 7412dv, 7412dw, 7412dx, 7412dy, 7412dz, 7412ea, 7412eb, 7412ec, 7412ed, 7412ee, 7412ef, 7412eg, 7412eh, 7412ei, 7412ej, 7412ek, 7412el, 7412em, 7412en, 7412eo, 7412ep, 7412eq, 7412er, 7412es, 7412et, 7412eu, 7412ev, 7412ew, 7412ex, 7412ey, 7412ez, 7412fa, 7412fb, 7412fc, 7412fd, 7412fe, 7412ff, 7412fg, 7412fh, 7412fi, 7412fj, 7412fk, 7412fl, 7412fm, 7412fn, 7412fo, 7412fp, 7412fq, 7412fr, 7412fs, 7412ft, 7412fu, 7412fv, 7412fw, 7412fx, 7412fy, 7412fz, 7412ga, 7412gb, 7412gc, 7412gd, 7412ge, 7412gf, 7412gg, 7412gh, 7412gi, 7412gj, 7412gk, 7412gl, 7412gm, 7412gn, 7412go, 7412gp, 7412gq, 7412gr, 7412gs, 7412gt, 7412gu, 7412gv, 7412gw, 7412gx, 7412gy, 7412gz, 7412ha, 7412hb, 7412hc, 7412hd, 7412he, 7412hf, 7412hg, 7412hh, 7412hi, 7412hj, 7412hk, 7412hl, 7412hm, 7412hn, 7412ho, 7412hp, 7412hq, 7412hr, 7412hs, 7412ht, 7412hu, 7412hv, 7412hw, 7412hx, 7412hy, 7412hz, 7412ia, 7412ib, 7412ic, 7412id, 7412ie, 7412if, 7412ig, 7412ih, 7412ii, 7412ij, 7412ik, 7412il, 7412im, 7412in, 7412io, 7412ip, 7412iq, 7412ir, 7412is, 7412it, 7412iu, 7412iv, 7412iw, 7412ix, 7412iy, 7412iz, 7412ja, 7412jb, 7412jc, 7412jd, 7412je, 7412jf, 7412jg, 7412jh, 7412ji, 7412jj, 7412jk, 7412jl, 7412jm, 7412jn, 7412jo, 7412jp, 7412jq, 7412jr, 7412js, 7412jt, 7412ju, 7412jv, 7412jw, 7412jx, 7412jy, 7412jz, 7412ka, 7412kb, 7412kc, 7412kd, 7412ke, 7412kf, 7412kg, 7412kh, 7412ki, 7412kj, 7412kl, 7412km, 7412kn, 7412ko, 7412kp, 7412kq, 7412kr, 7412ks, 7412kt, 7412ku, 7412kv, 7412kw, 7412kx, 7412ky, 7412kz, 7412la, 7412lb, 7412lc, 7412ld, 7412le, 7412lf, 7412lg, 7412lh, 7412li, 7412lj, 7412lk, 7412ll, 7412lm, 7412ln, 7412lo, 7412lp, 7412lq, 7412lr, 7412ls, 7412lt, 7412lu, 7412lv, 7412lw, 7412lx, 7412ly, 7412lz, 7412ma, 7412mb, 7412mc, 7412md, 7412me, 7412mf, 7412mg, 7412mh, 7412mi, 7412mj, 7412mk, 7412ml, 7412mm, 7412mn, 7412mo, 7412mp, 7412mq, 7412mr, 7412ms, 7412mt, 7412mu, 7412mv, 7412mw, 7412mx, 7412my, 7412mz, 7412na, 7412nb, 7412nc, 7412nd, 7412ne, 7412nf, 7412ng, 7412nh, 7412ni, 7412nj, 7412nk, 7412nl, 7412nm, 7412nn, 7412no, 7412np, 7412nq, 7412nr, 7412ns, 7412nt, 7412nu, 7412nv, 7412nw, 7412nx, 7412ny, 7412nz, 7412oa, 7412ob, 7412oc, 7412od, 7412oe, 7412of, 7412og, 7412oh, 7412oi, 7412oj, 7412ok, 7412ol, 7412om, 7412on, 7412oo, 7412op, 7412oq, 7412or, 7412os, 7412ot, 7412ou, 7412ov, 7412ow, 7412ox, 7412oy, 7412oz, 7412pa, 7412pb, 7412pc, 7412pd, 7412pe, 7412pf, 7412pg, 7412ph, 7412pi, 7412pj, 7412pk, 7412pl, 7412pm, 7412pn, 7412po, 7412pp, 7412pq, 7412pr, 7412ps, 7412pt, 7412pu, 7412pv, 7412pw, 7412px, 7412py, 7412pz, 7412qa, 7412qb, 7412qc, 7412qd, 7412qe, 7412qf, 7412qg, 7412qh, 7412qi, 7412qj, 7412qk, 7412ql, 7412qm, 7412qn, 7412qo, 7412qp, 7412qq, 7412qr, 7412qs, 7412qt, 7412qu, 7412qv, 7412qw, 7412qx, 7412qy, 7412qz, 7412ra, 7412rb, 7412rc, 7412rd, 7412re, 7412rf, 7412rg, 7412rh, 7412ri, 7412rj, 7412rk, 7412rl, 7412rm, 7412rn, 7412ro, 7412rp, 7412rq, 7412rr, 7412rs, 7412rt, 7412ru, 7412rv, 7412rw, 7412rx, 7412ry, 7412rz, 7412sa, 7412sb, 7412sc, 7412sd, 7412se, 7412sf, 7412sg, 7412sh, 7412si, 7412sj, 7412sk, 7412sl, 7412sm, 7412sn, 7412so, 7412sp, 7412sq, 7412sr, 7412ss, 7412st, 7412su, 7412sv, 7412sw, 7412sx, 7412sy, 7412sz, 7412ta, 7412tb, 7412tc, 7412td, 7412te, 7412tf, 7412tg, 7412th, 7412ti, 7412tj, 7412tk, 7412tl, 7412tm, 7412tn, 7412to, 7412tp, 7412tq, 7412tr, 7412ts, 7412tt, 7412tu, 7412tv, 7412tw, 7412tx, 7412ty, 7412tz

F-16: 7B

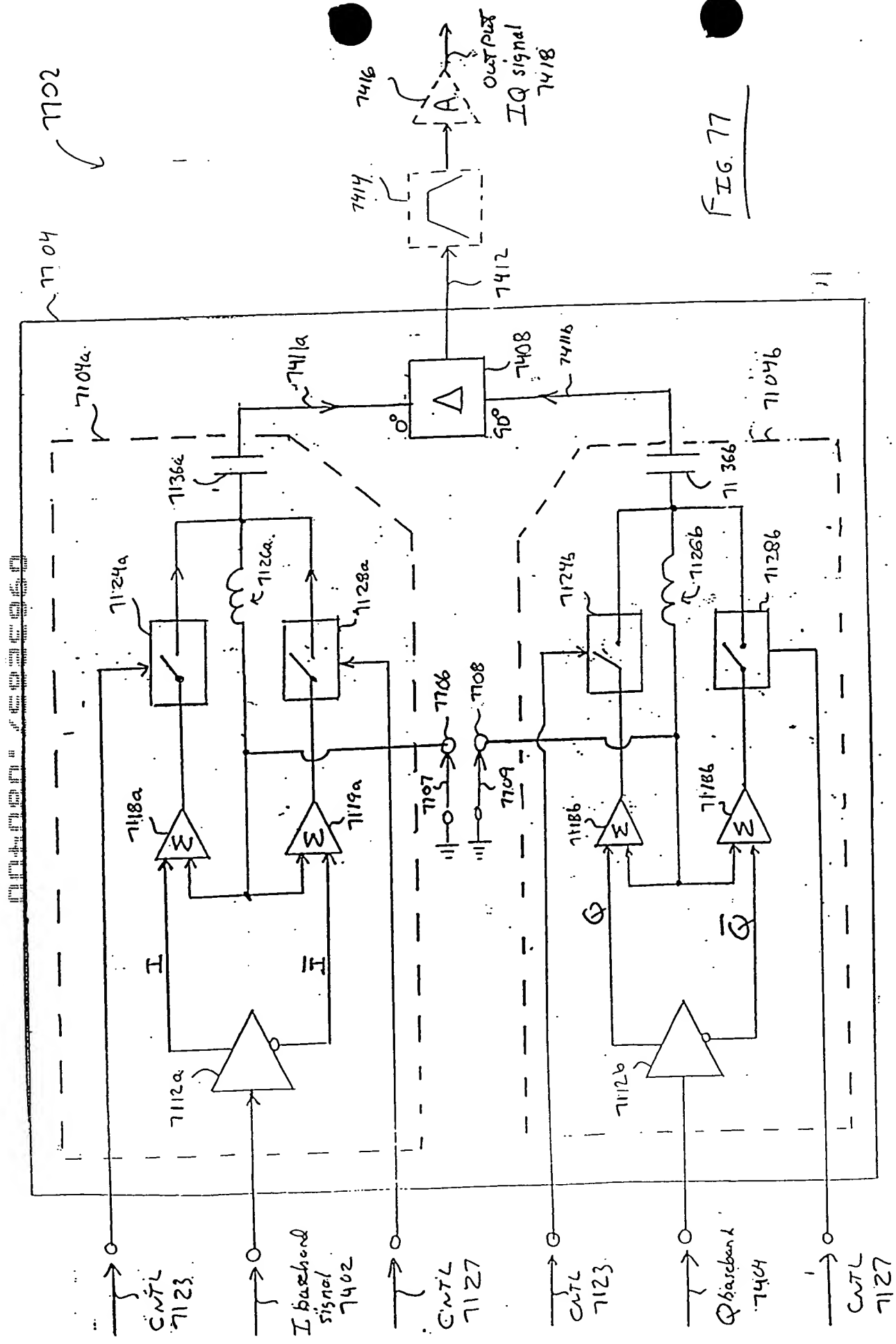


FIG. 77

7704

7416
OUT PUT
IQ signal
7418

CNTL
7123

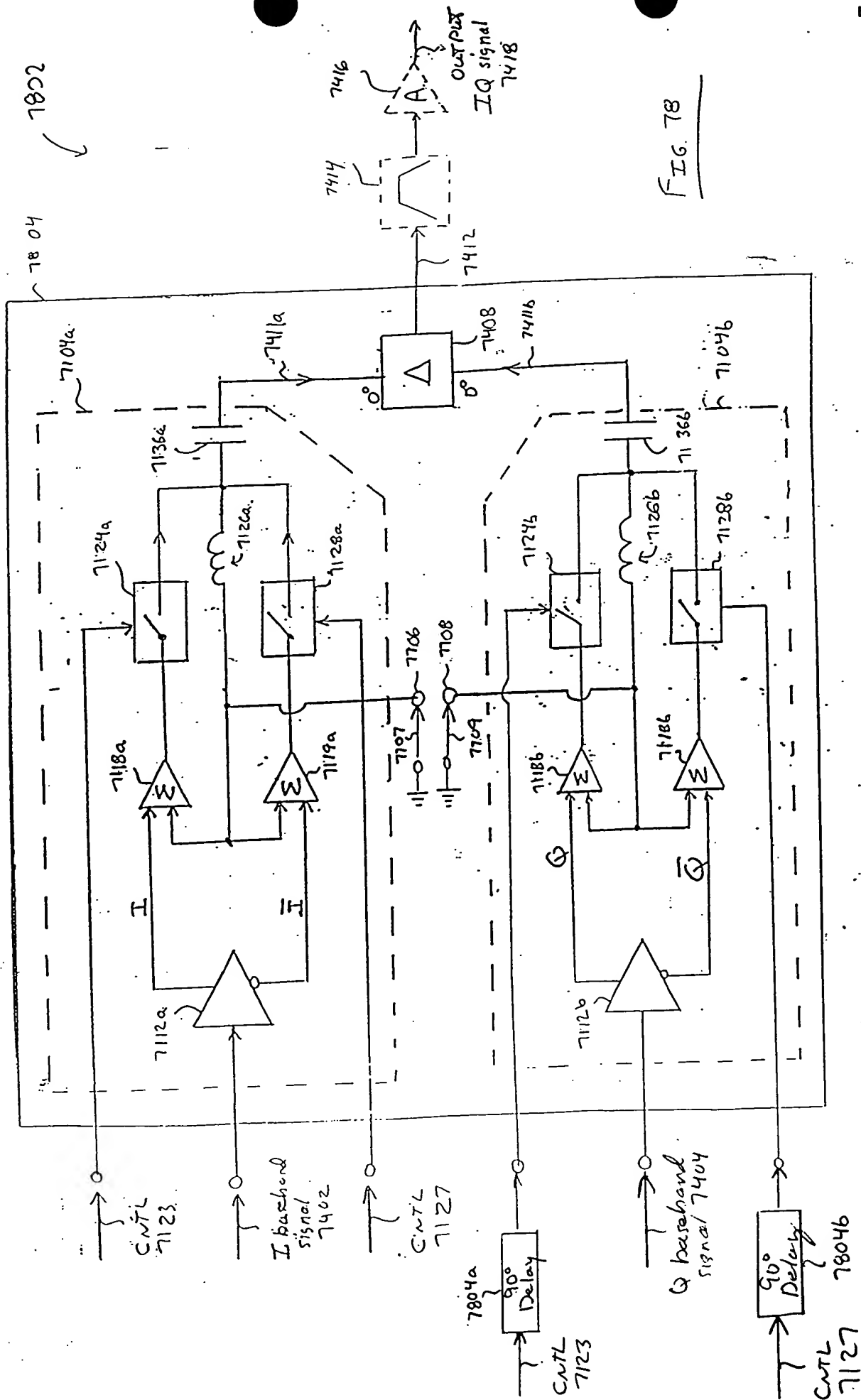
I baseband
signal
7402

CNTL
7127

CNTL
7123

Q baseband
7404

CNTL
7127



004080-2532650

7900

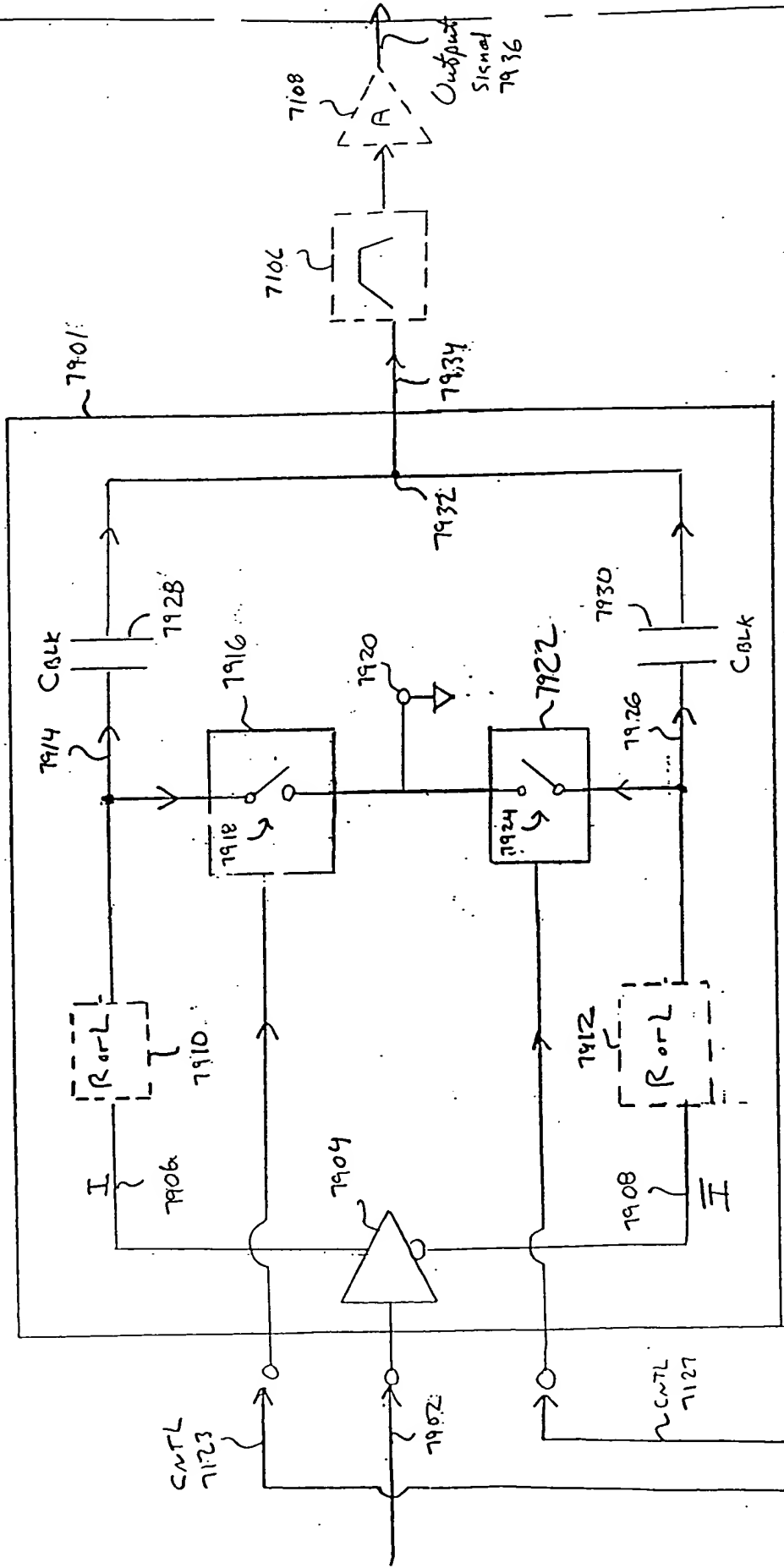


Fig. 79A

004030 0032250

7900

✓

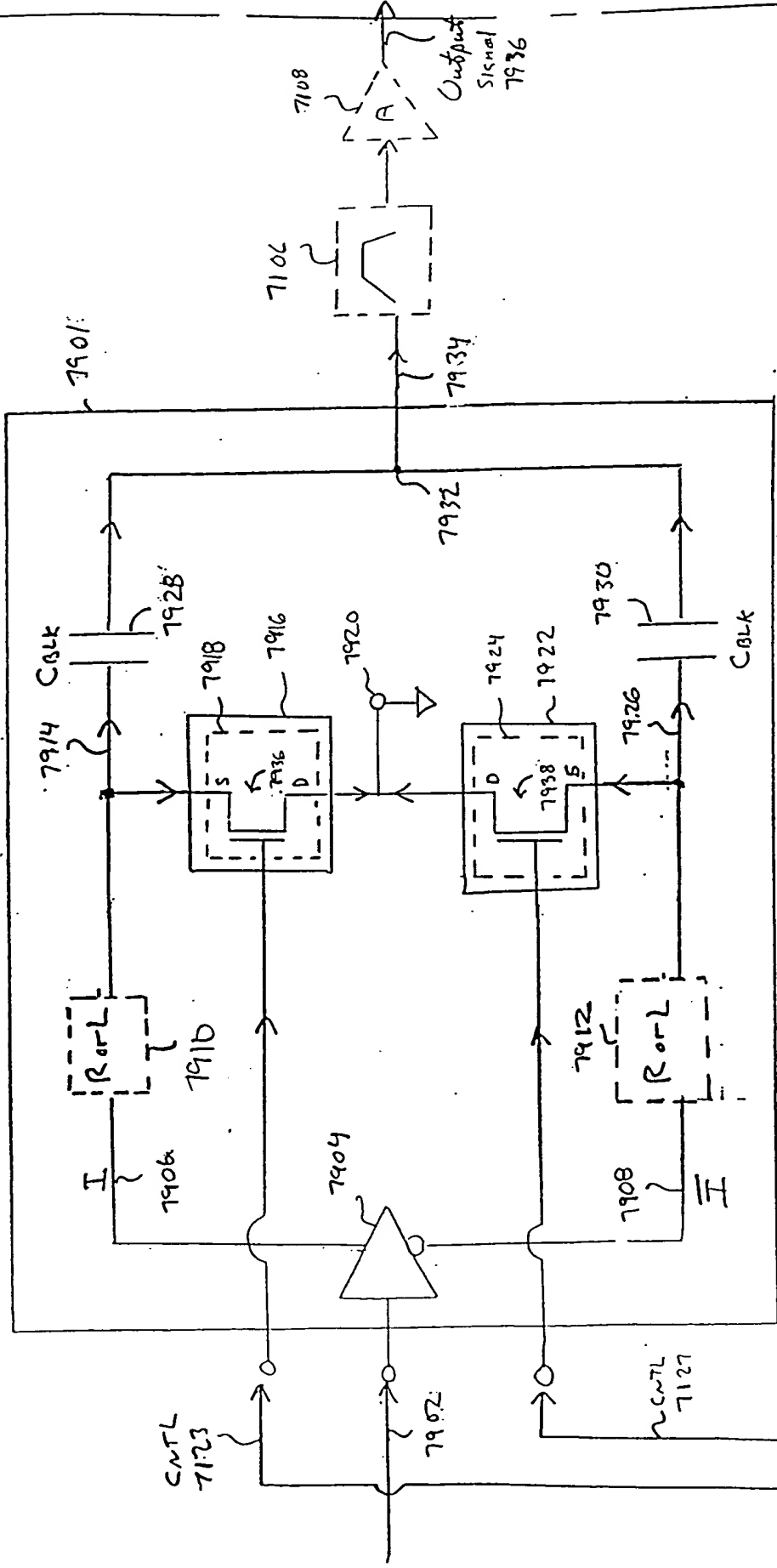


FIG. 79D

DATA BUS

8001

8001

CNTL
7123

I baseband
8002

CNTL
7127

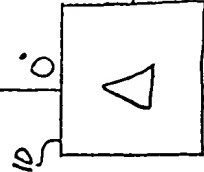
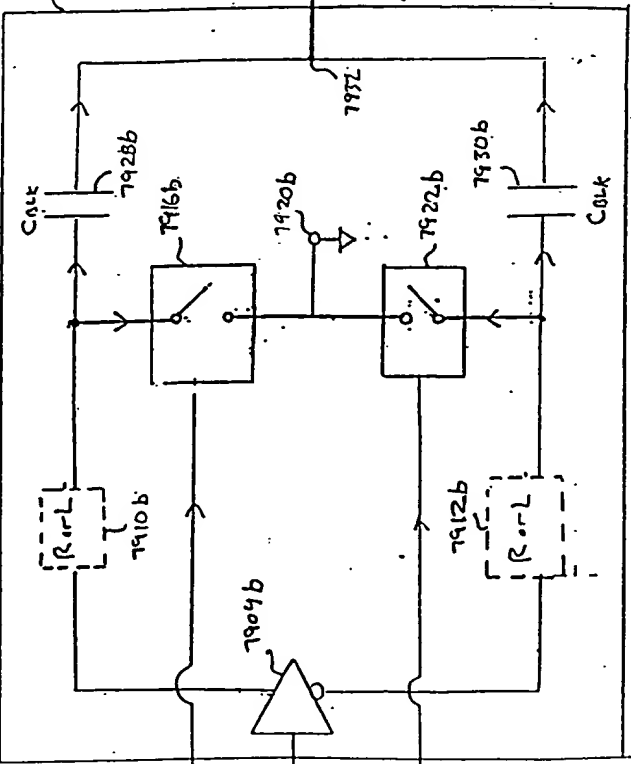
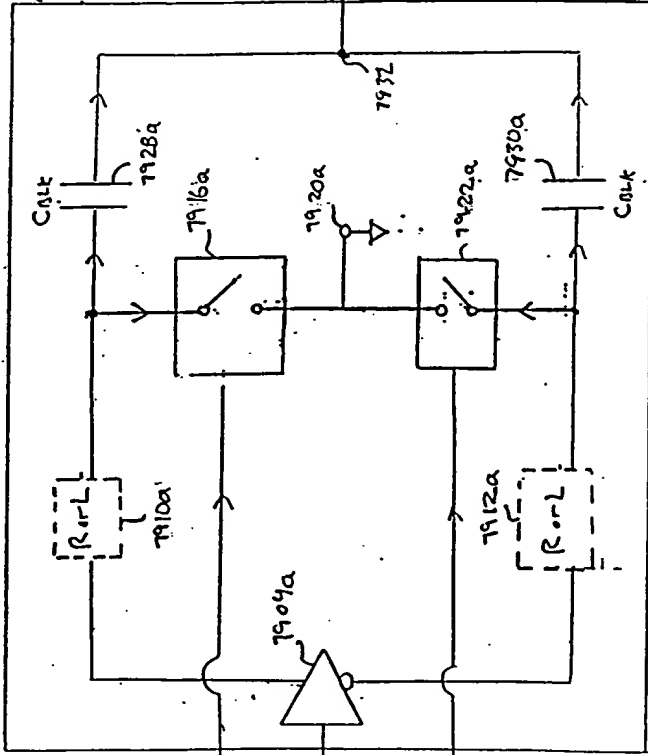
CNTL
7123

Q baseband
8004

CNTL
7127

7901a

8006



Output
Signal
8016

8012

8011

8014

FIG. 80

8228

8202

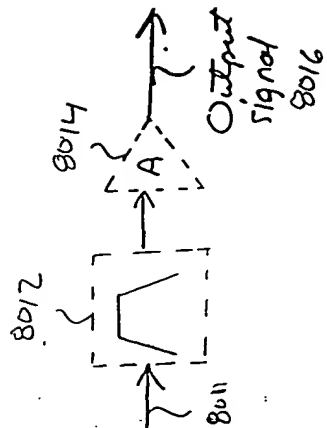
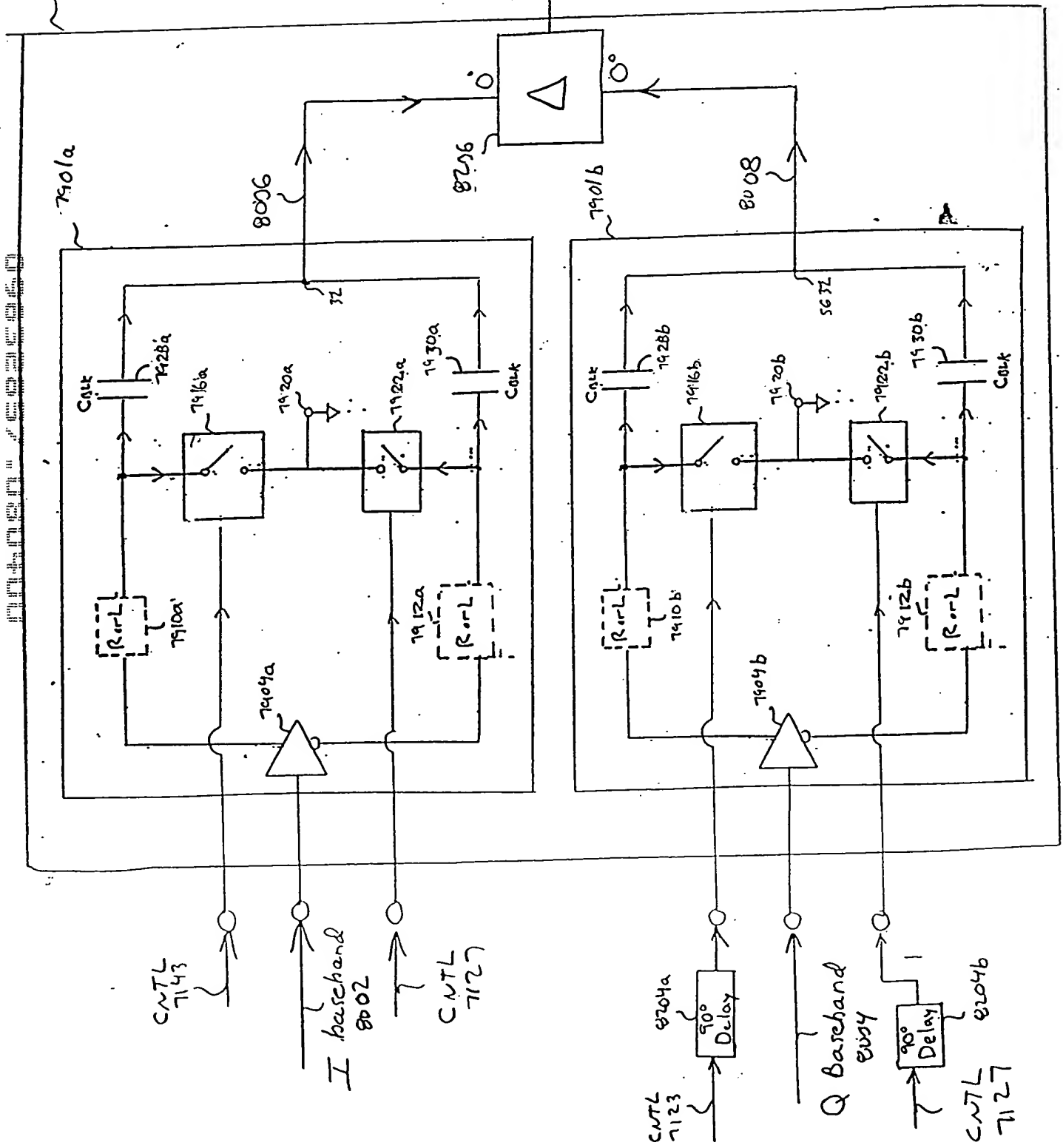


FIG. 82

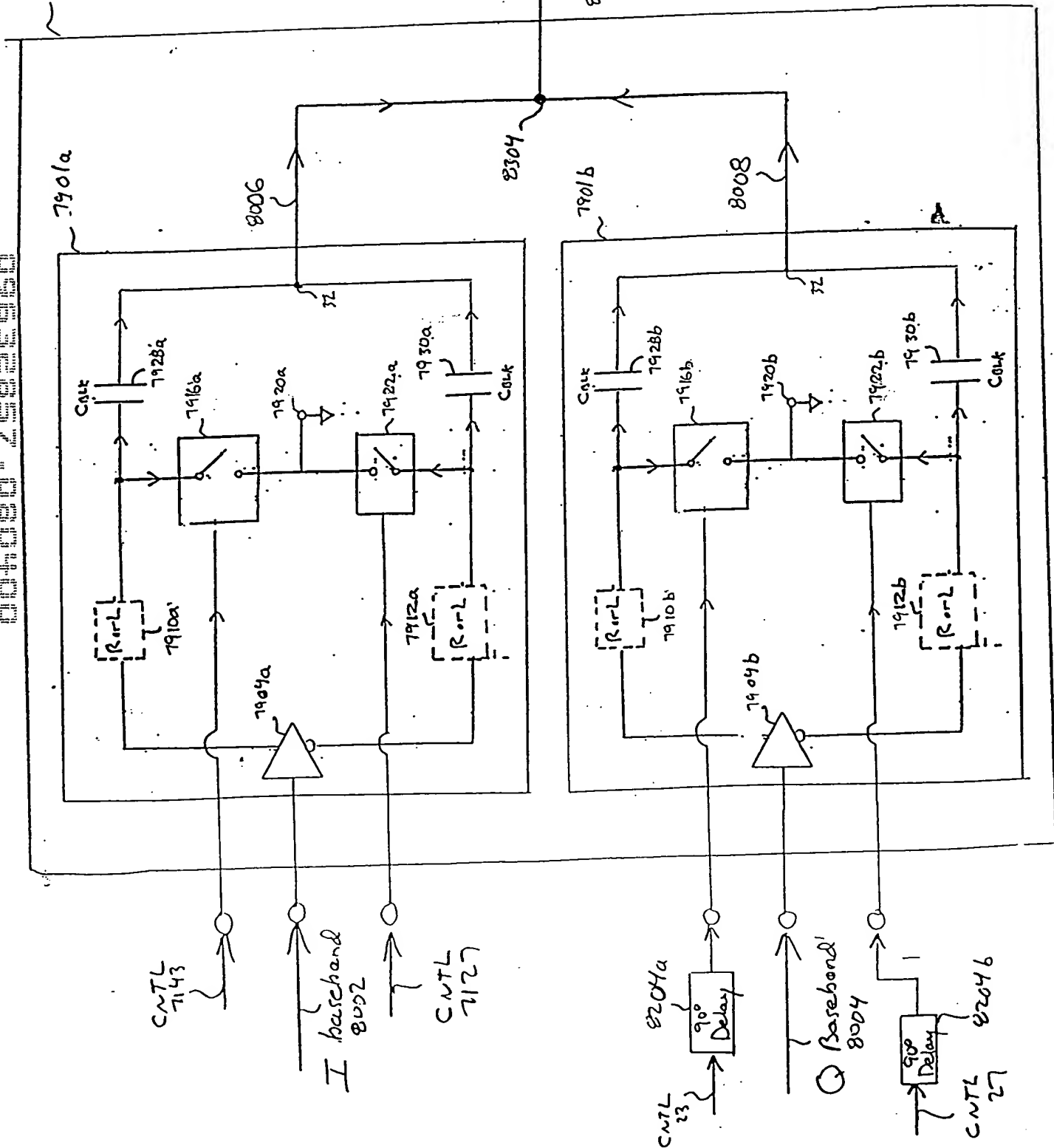


8300

004030 / 00000000

8302

Fig. 83



90° Delay
8204a

Q Baseband
8004

90° Delay
8204b

CNTL 27

004080 25922950

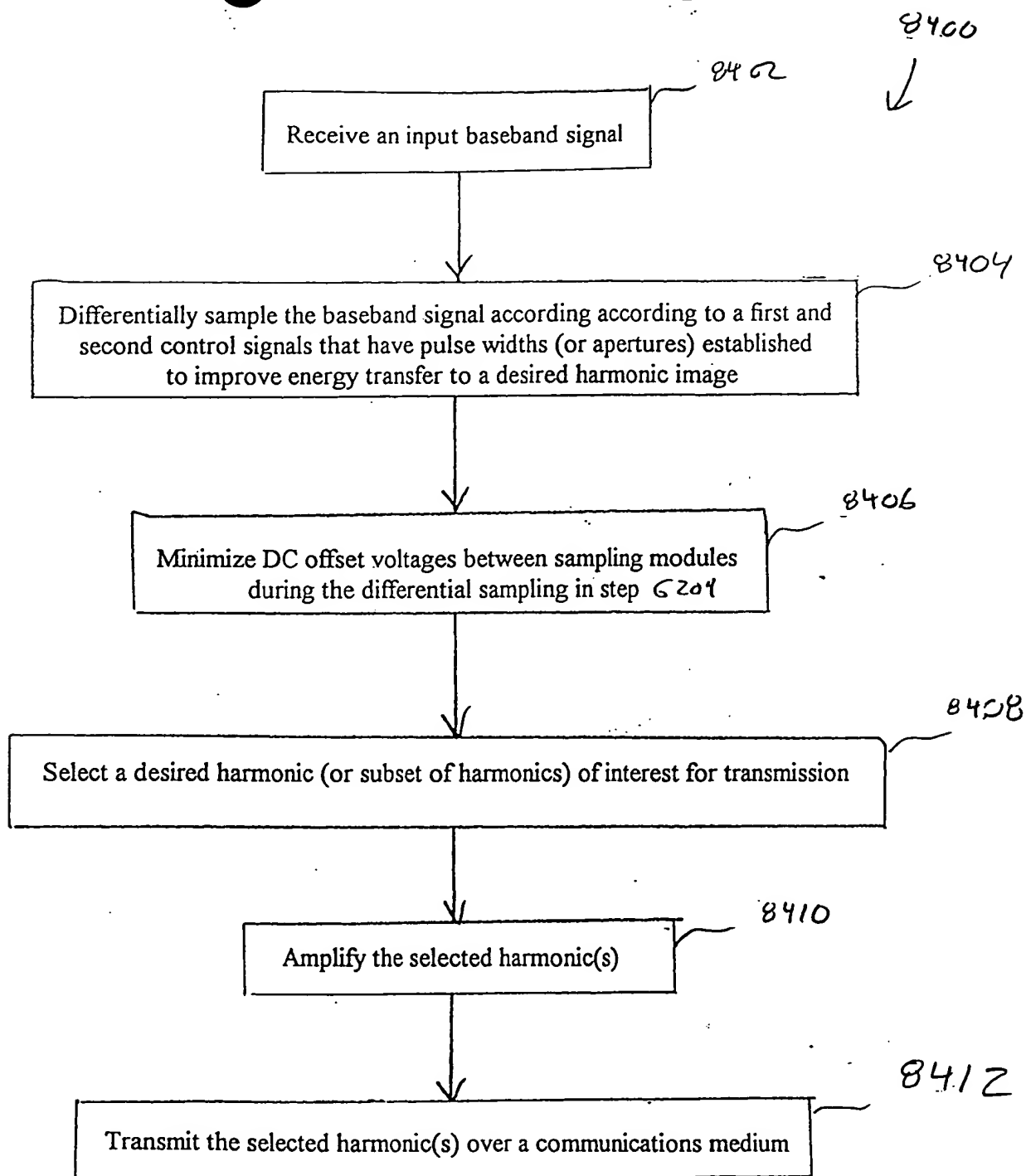


FIG. 84

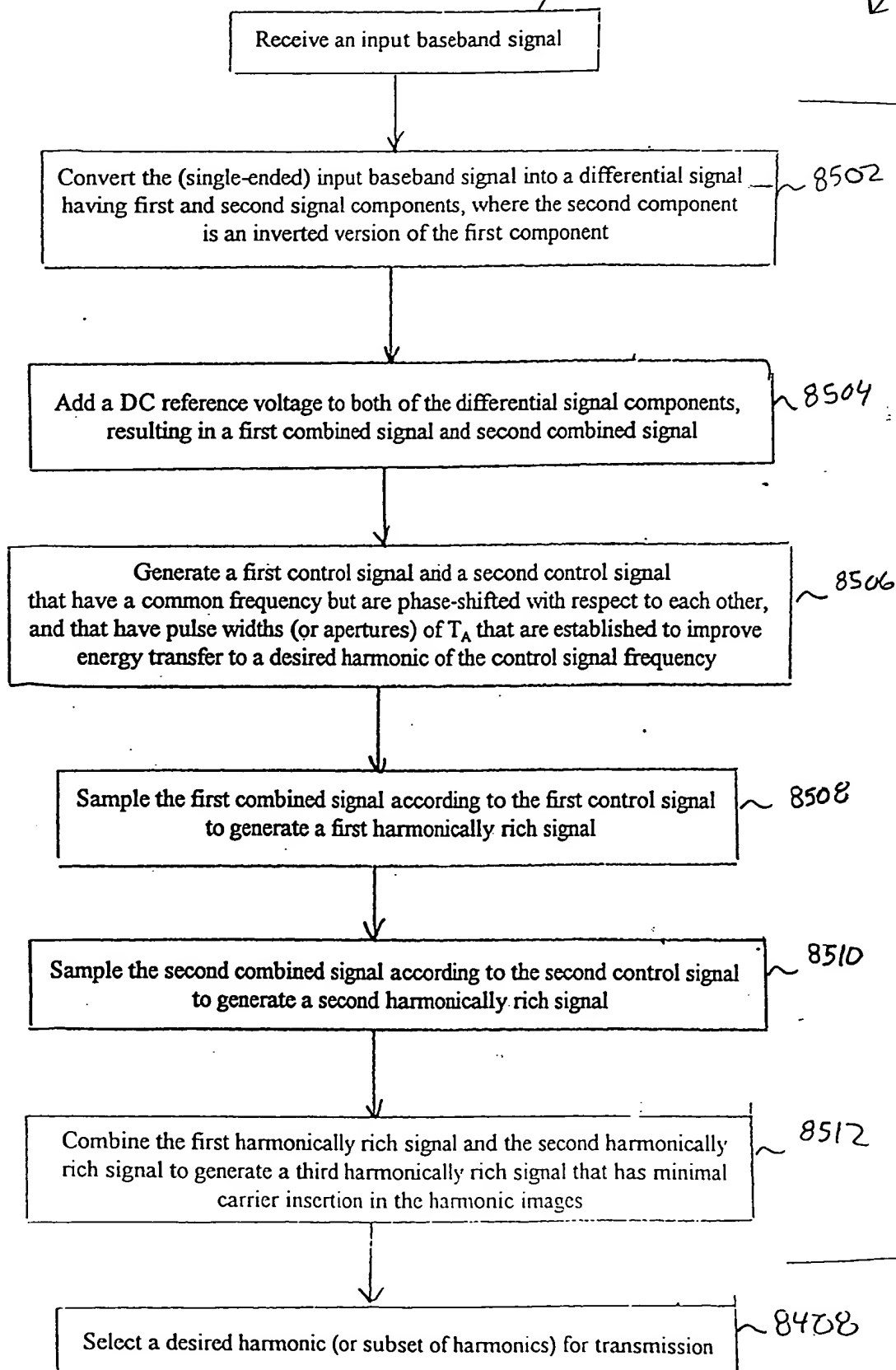


FIG. 85

004030 263350

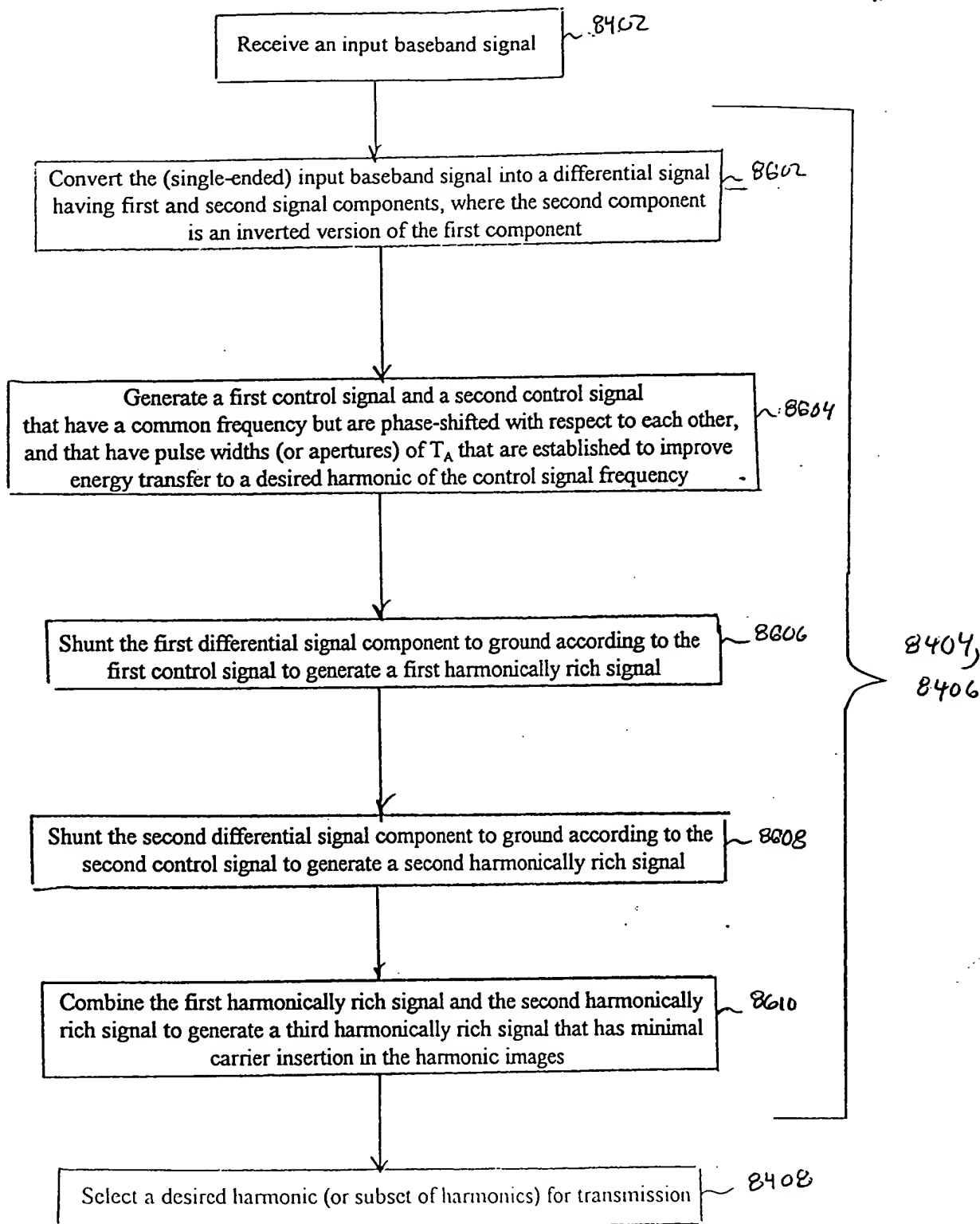


FIG. 26

Receive an I baseband signal and a Q baseband signal

Differentially sample the I baseband signal according to a first and second control signals that have pulse widths (or apertures) established to improve energy transfer to a desired harmonic image in the resulting I harmonically rich signal

Differentially sample the Q baseband signal according to a first and second control signals that have pulse widths (or apertures) established to improve energy transfer to a desired harmonic image in the resulting Q harmonically rich signal

Minimize DC offset voltages between sampling modules during the differential sampling steps

Combine the I harmonically rich signal and the Q harmonically rich signal to generate an IQ harmonically rich signal

Select a desired harmonic (or subset of harmonics) of interest for transmission

Amplify the selected harmonic(s)

Transmit the selected harmonic(s) over a communications medium

FIG. 87

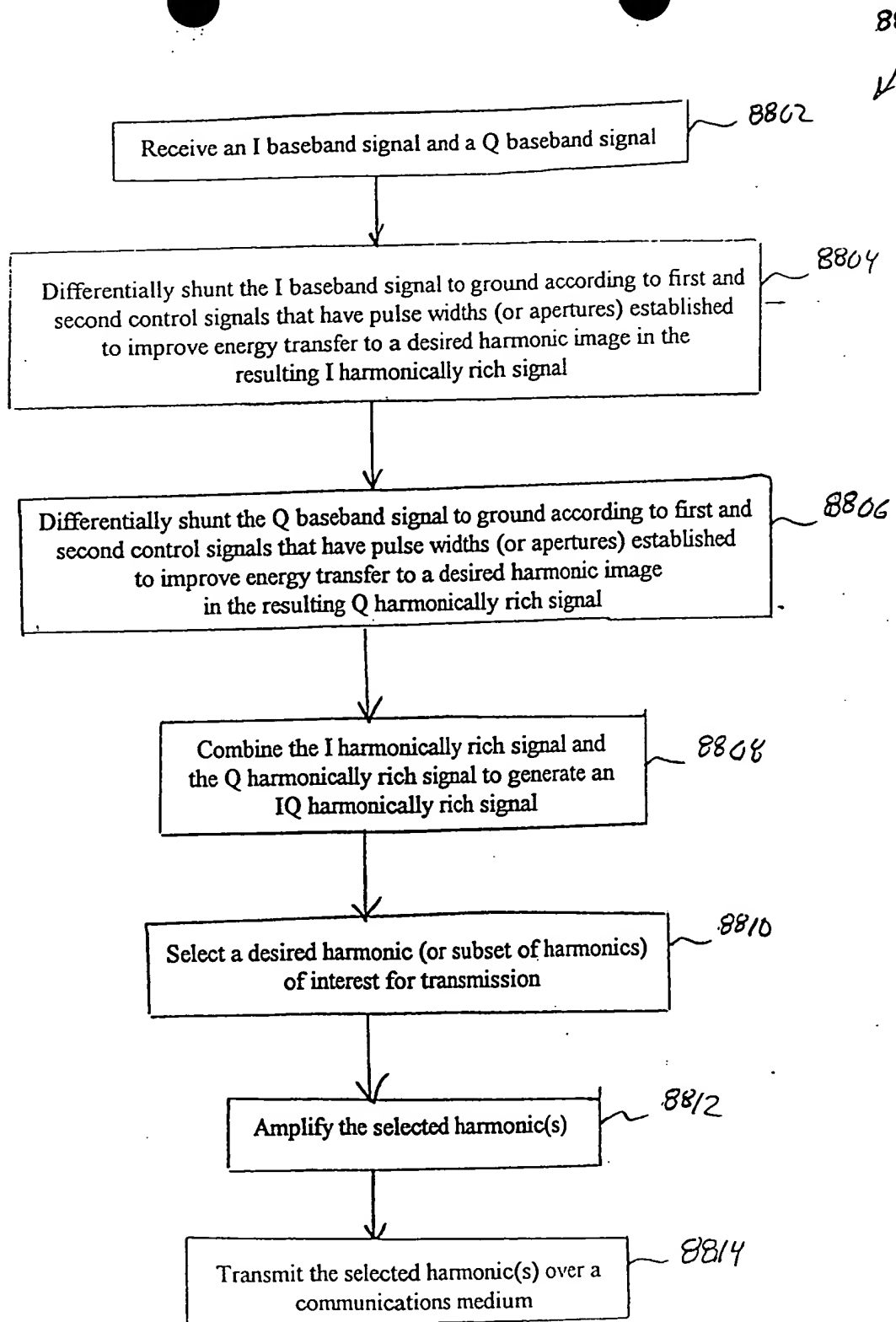


FIG. 88

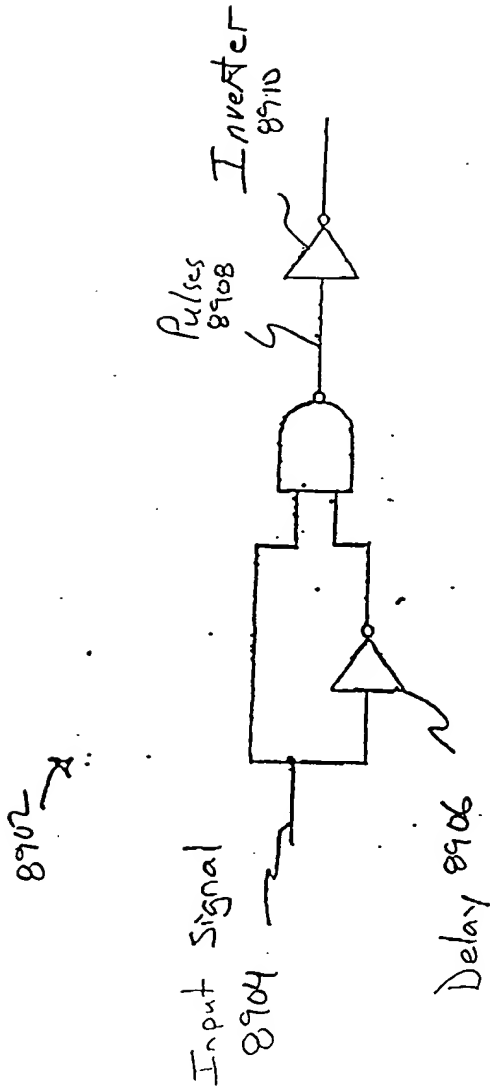


FIG. 89A

FIG. 89B

8904

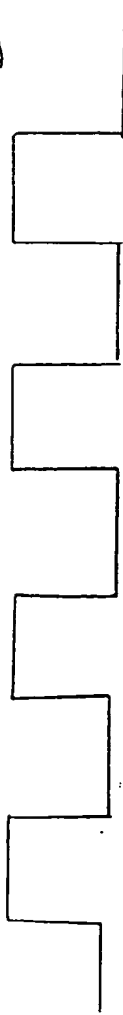


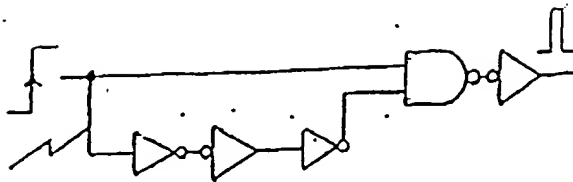
FIG. 89C

8908

$\rightarrow T_{pk}$



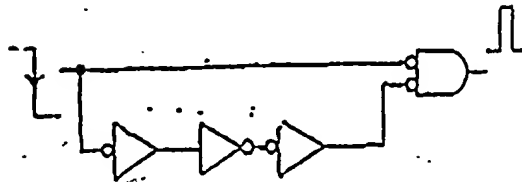
8912
↓



A. rising edge pulse generator

FIG. 89D

8916
↓



B. falling-edge pulse generator

FIG. 89E

Frame Control	Duration	RA	FCS
2	2	6	4

FIG. 90

Frame Control	Duration	RA	FCS
2	2	6	4

FIG. 91

004020 403000

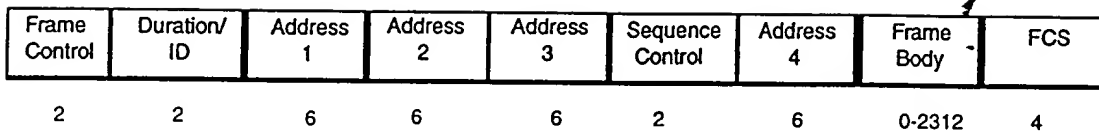


FIG. 92

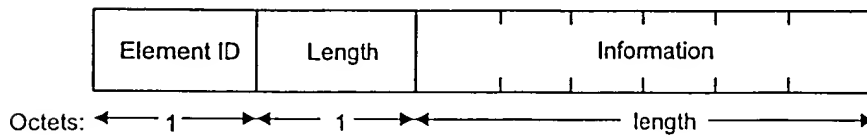


FIG. 93

004080" 4033E960

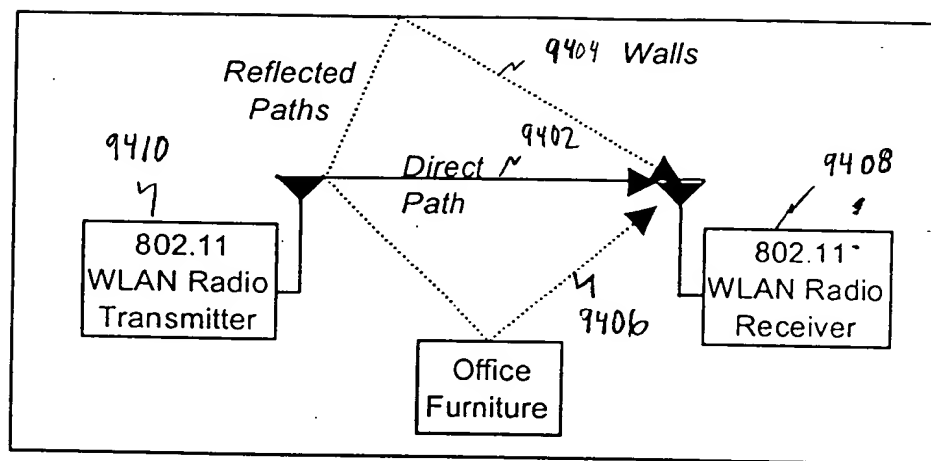
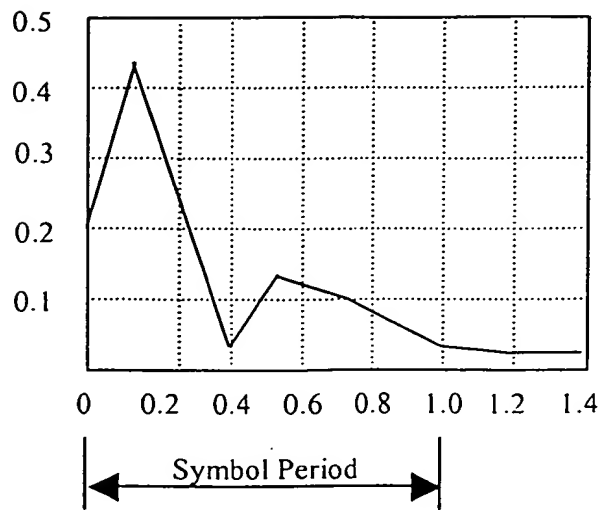


FIG. 94



100nsec
RMS Delay Spread

FIG. 95

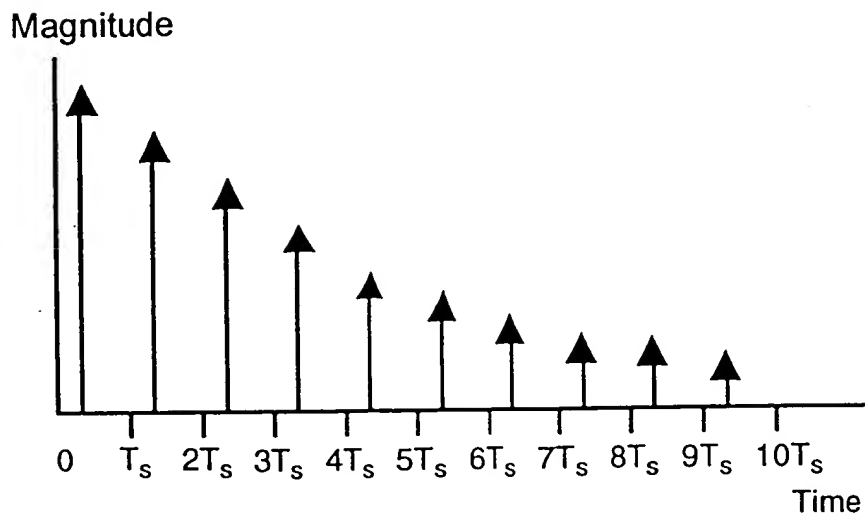


FIG. 96

WLAN CELL 9700

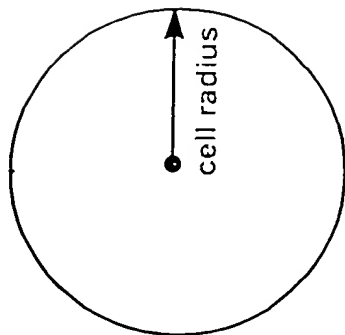


FIG. 97

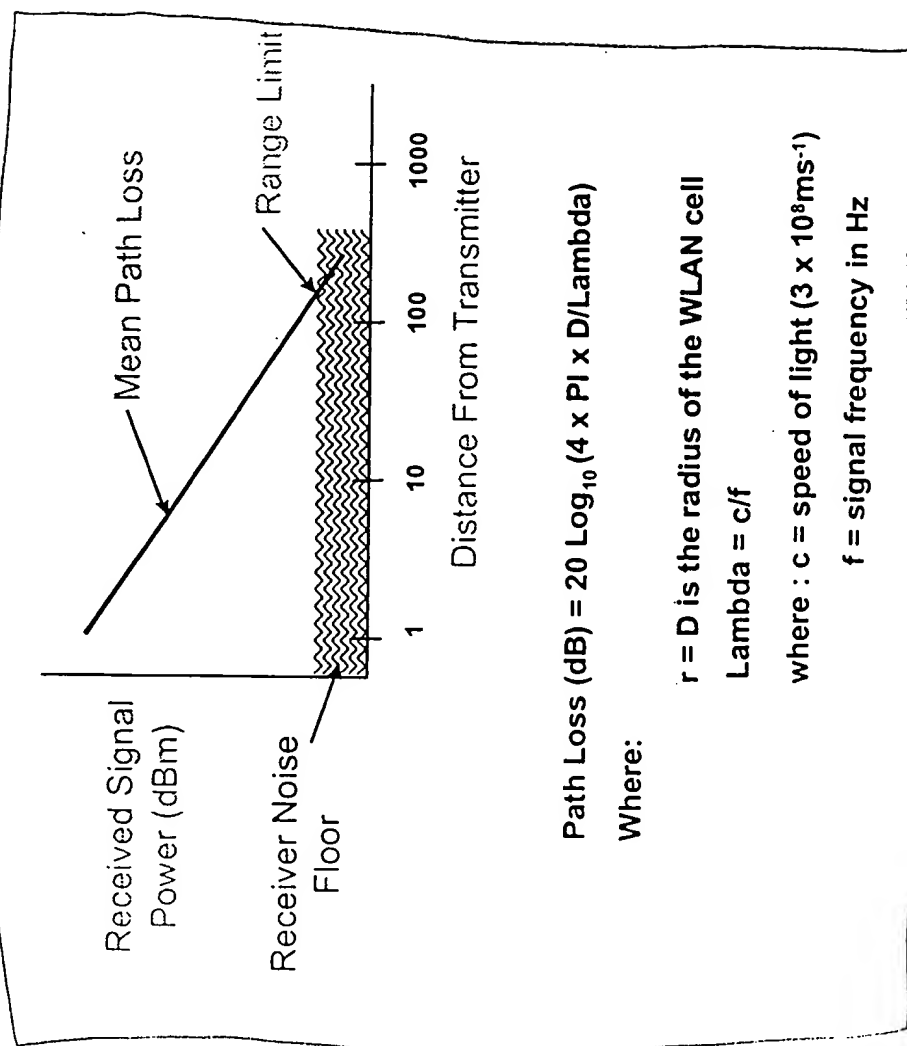


FIG. 98

Bit Error Rate of Coded Modulation

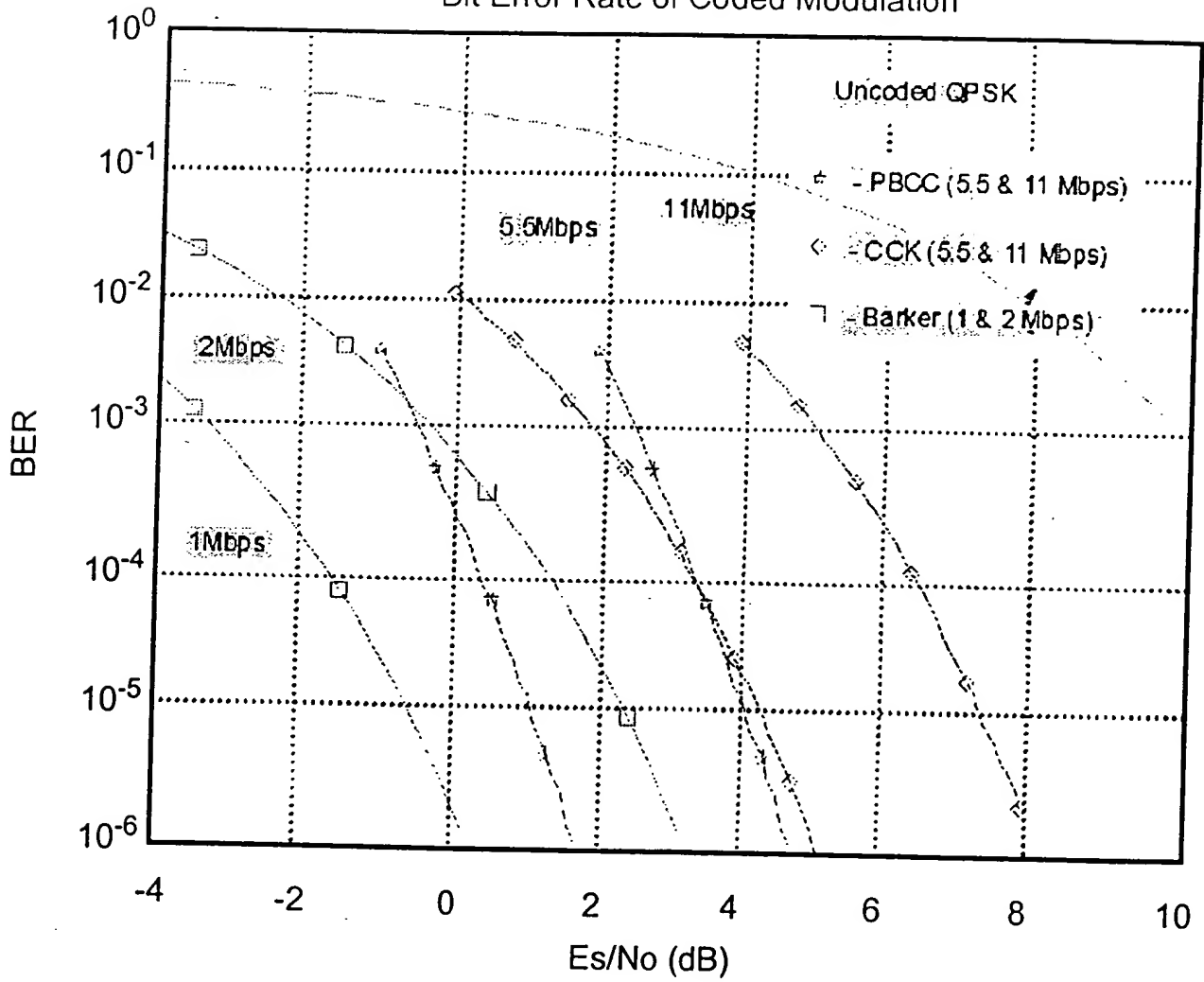


FIG. 99

The diagram illustrates a Basic Service Set (BSS) for 802.11 wireless networking. It is enclosed in a large dotted circle. At the center is an **802.11 Access Point**, which is labeled **Diversity** above it, indicating it uses multiple antennas for signal reception and transmission. Four **802.11 Mobile Station**s are connected to the Access Point. One of these stations, located at the bottom right, is specifically labeled **Single Antenna**, indicating it has only one antenna. The diagram shows the spatial distribution of devices within a single BSS.

FIG. 100

20240203 15:22:50

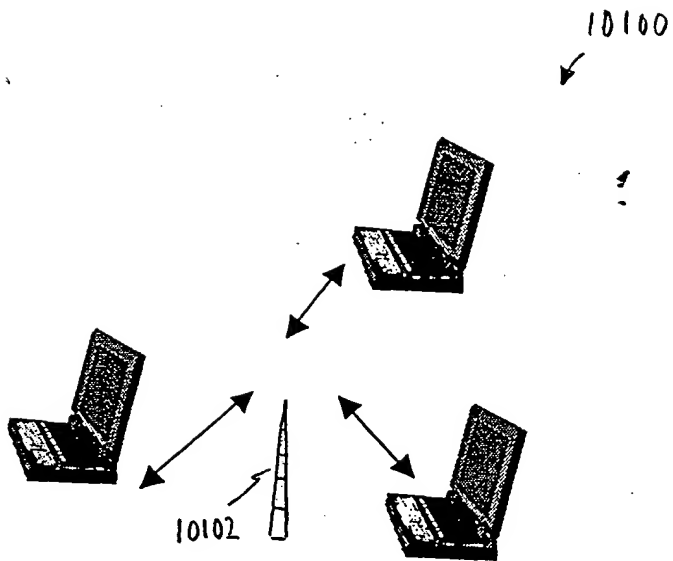


FIG. 101A

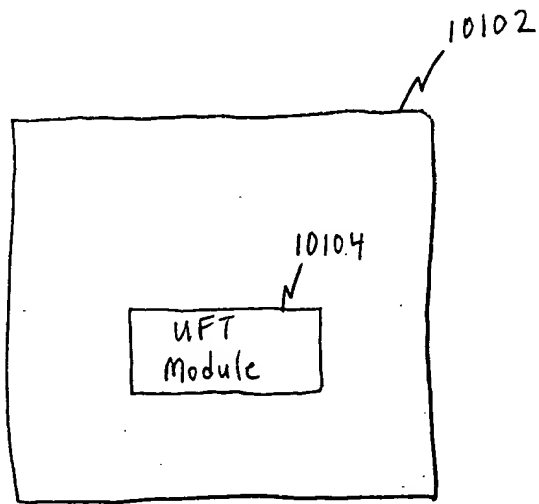
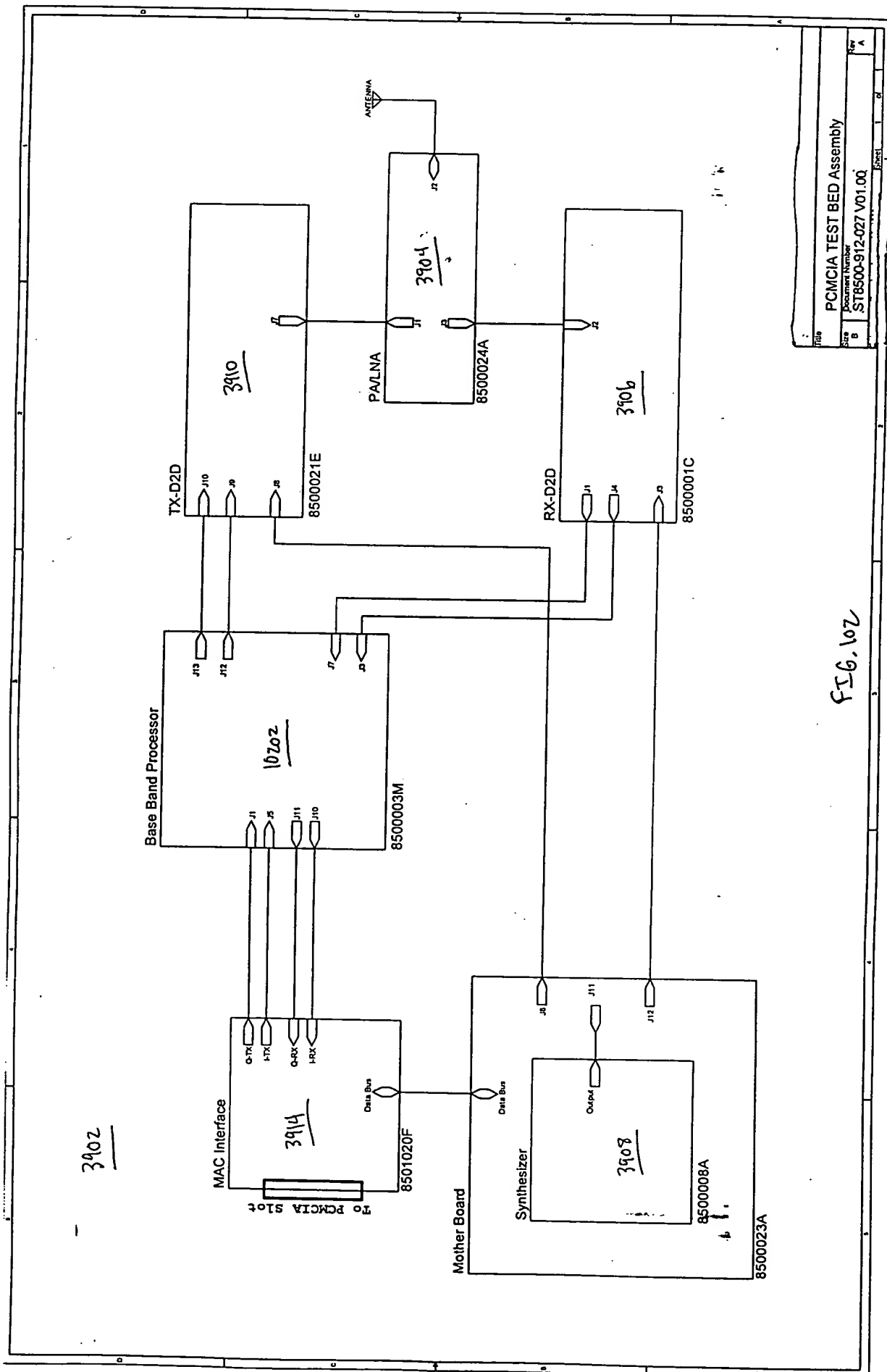


FIG. 101 B

004020" 4532E950

3044030 23326950



09632657 080400

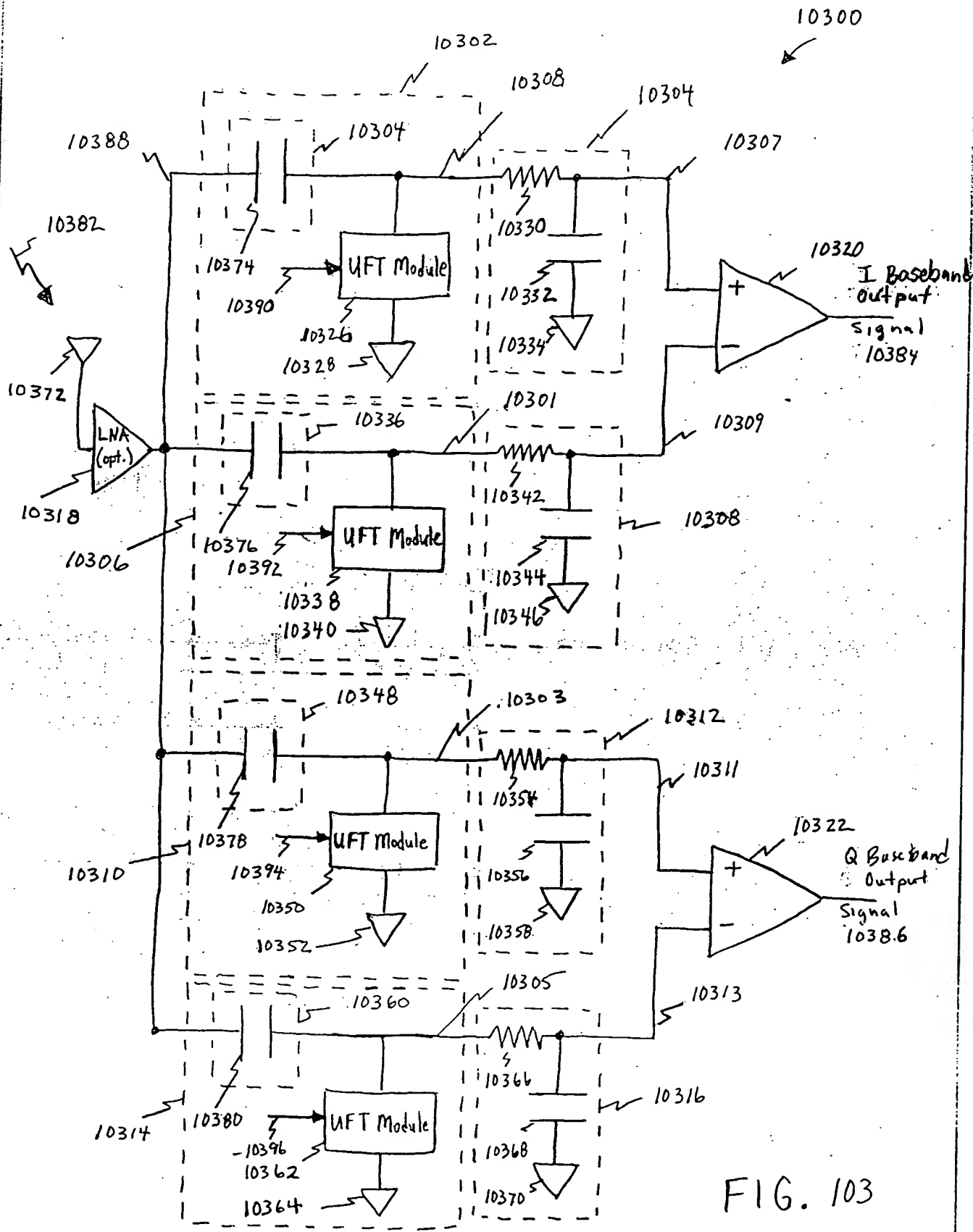


FIG. 103

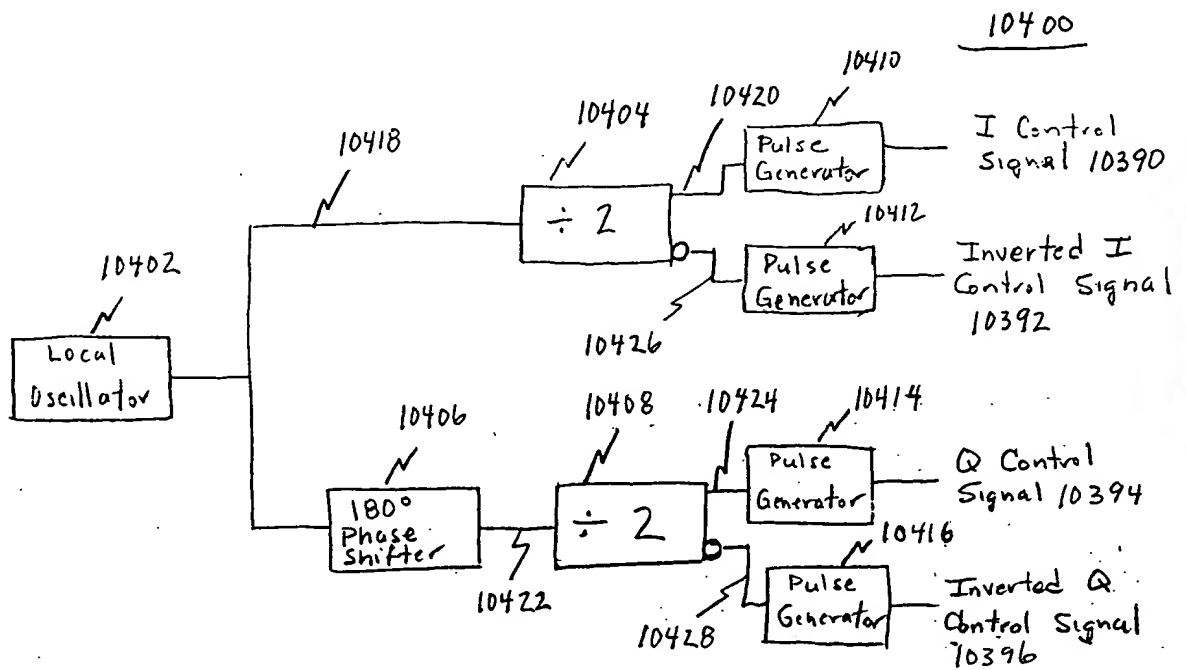


FIG. 104

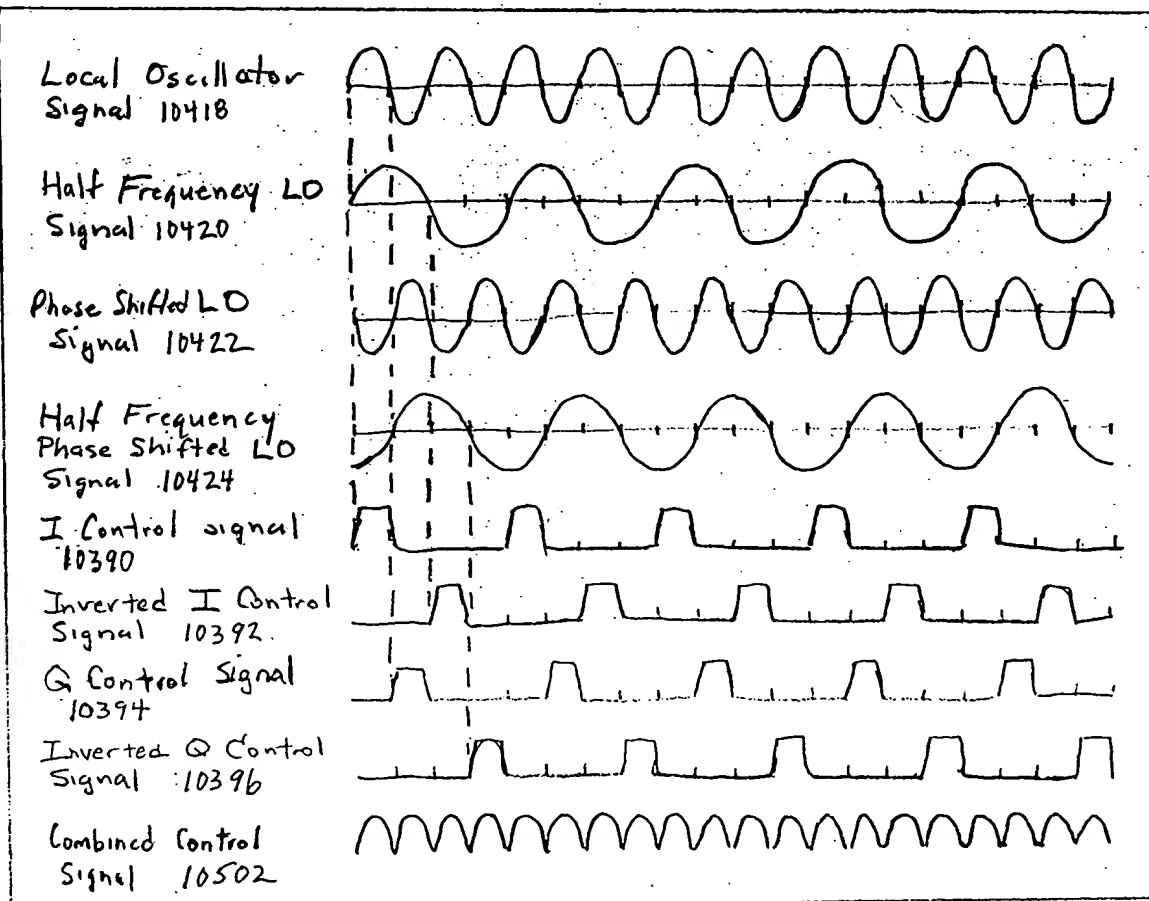


FIG. 105

(A) IQDEMOD PULSE RELATIONSHIPS TO INPUT RF CARRIER

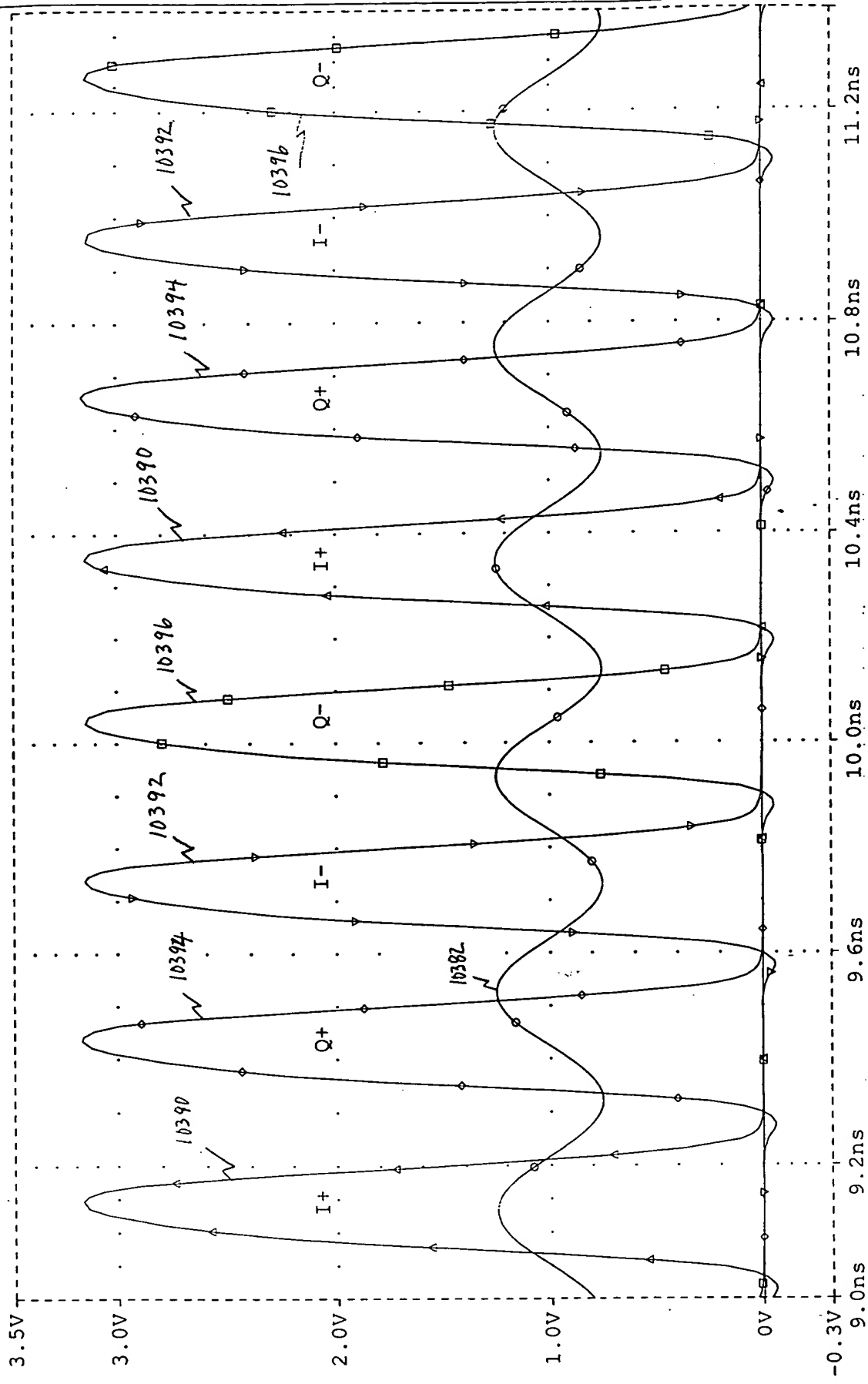


FIG. 106

103 00

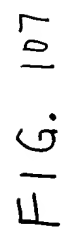
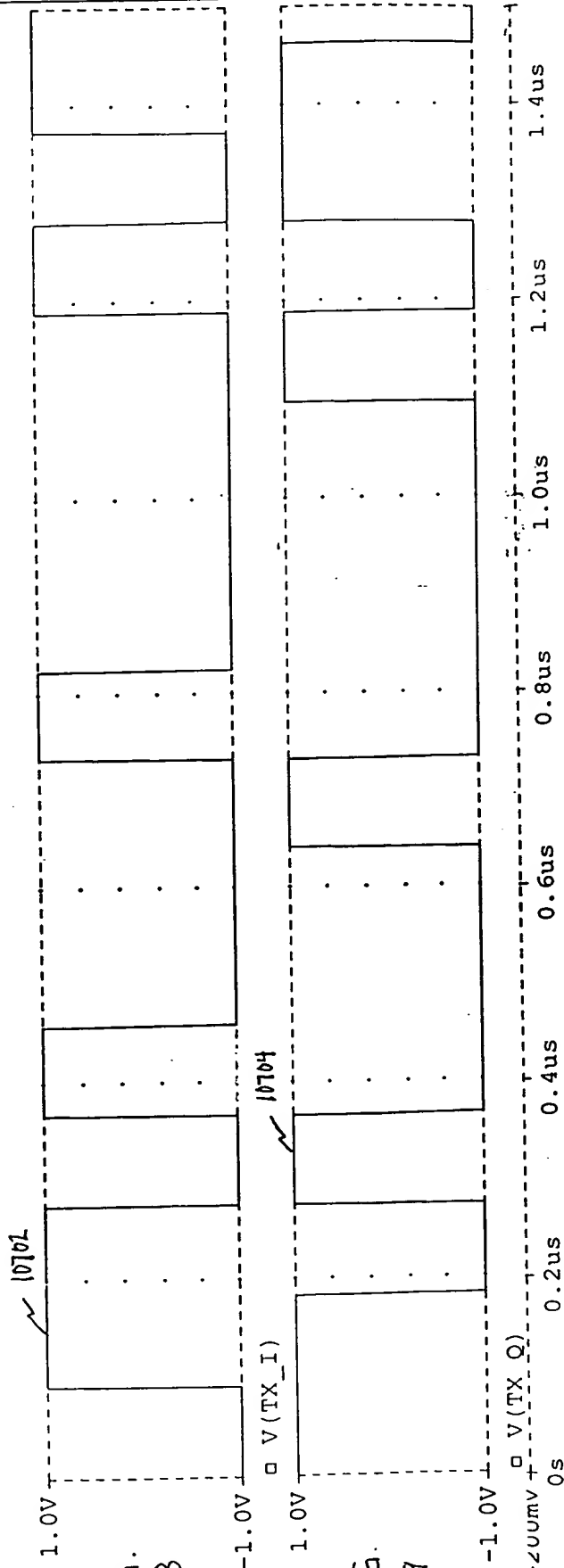
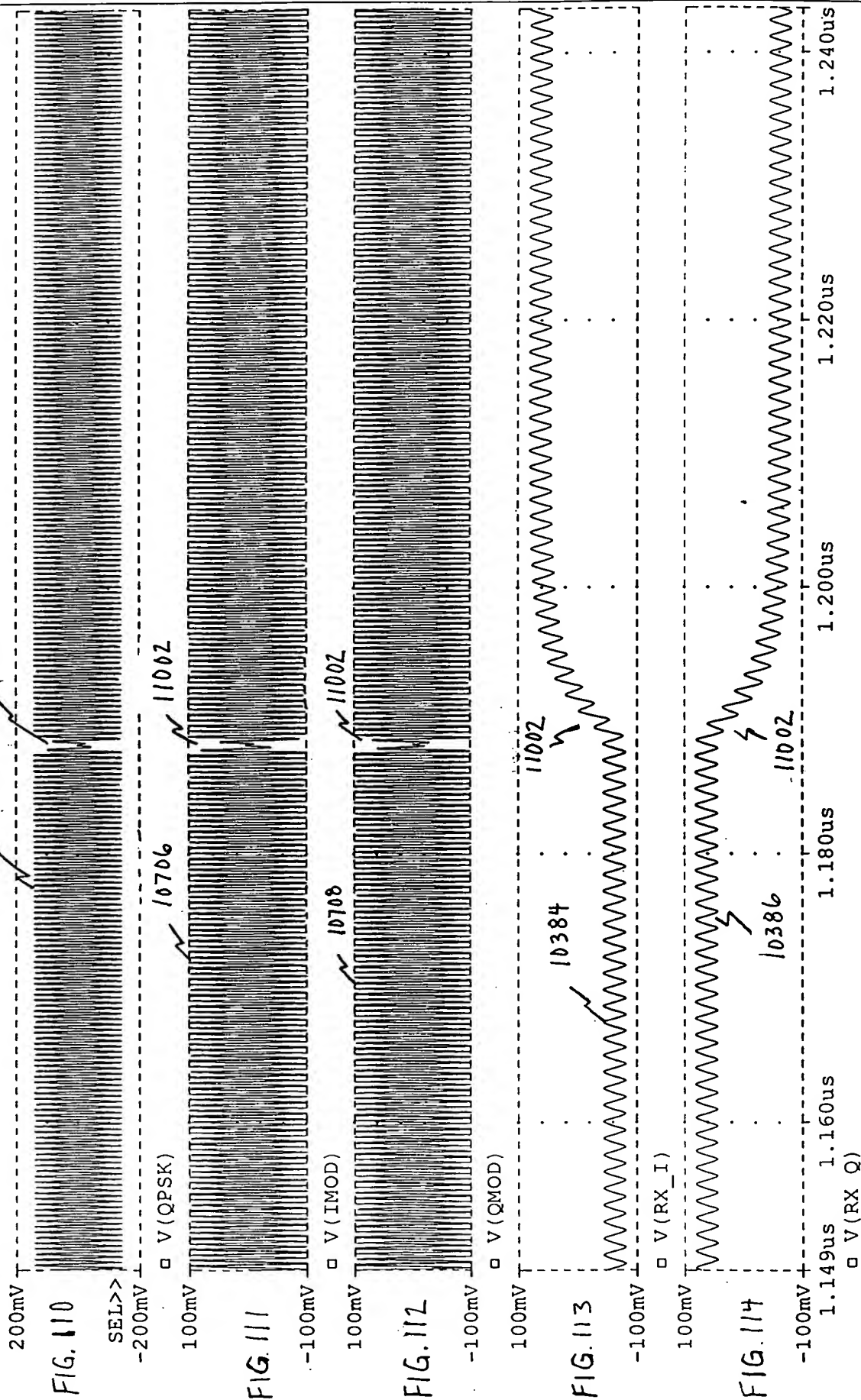


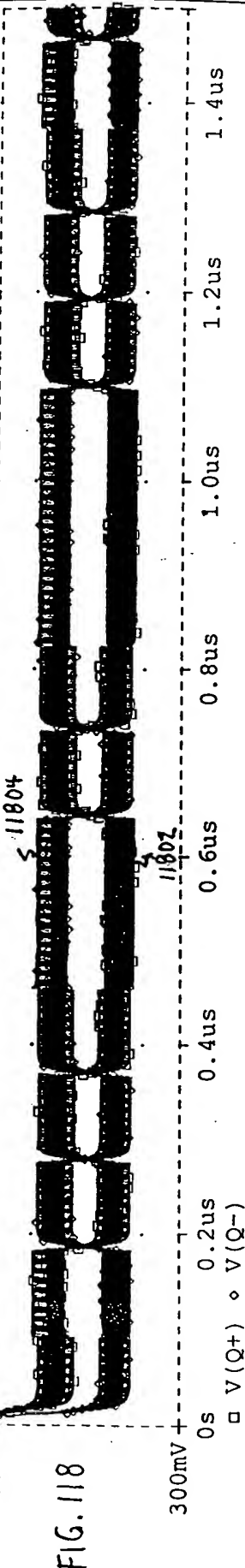
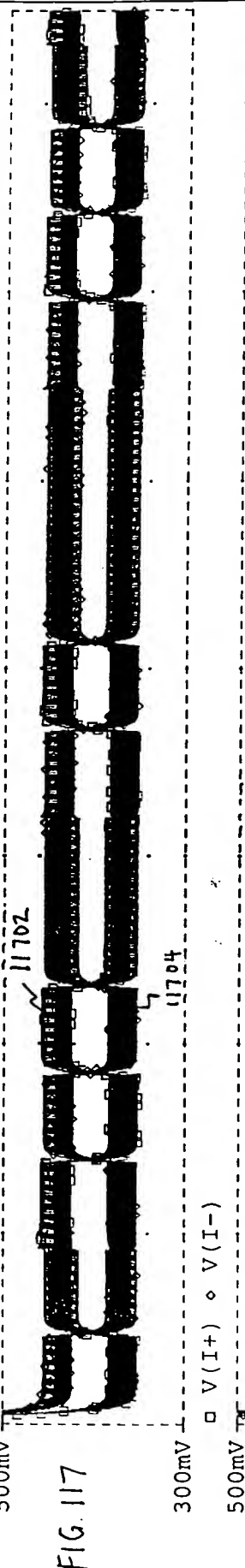
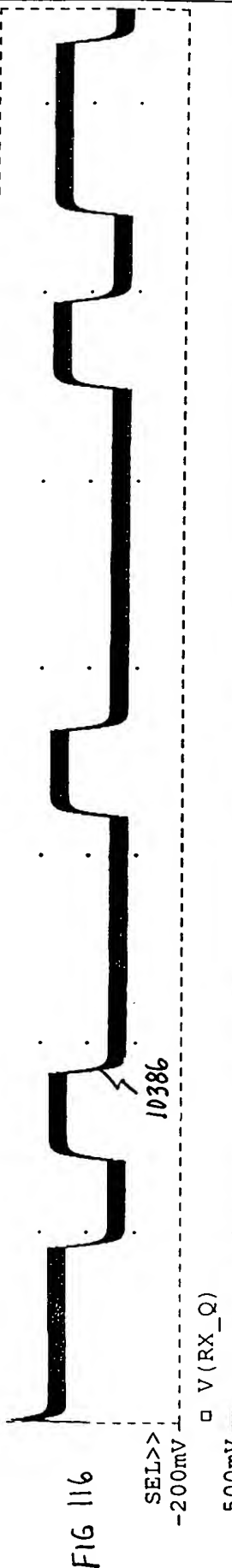
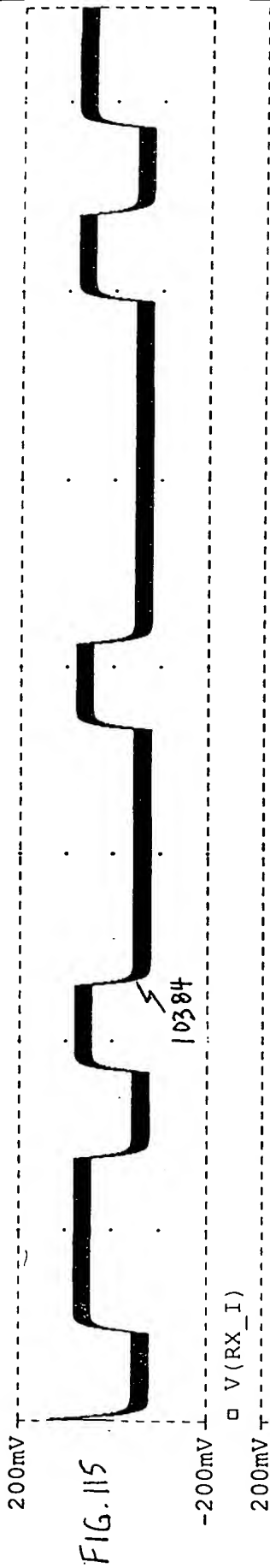
FIG. 107

(A) IQDEMOD SHOWING TIME RELATIONSHIP OF TX I AND Q DATA





(B) IQDEMOD RELATIONSHIP OF I AND Q RECEIVED DATA DIFFERENTIAL(BOTTOM) AND SINGLE ENDED AFTER DIFF AMP...



Time

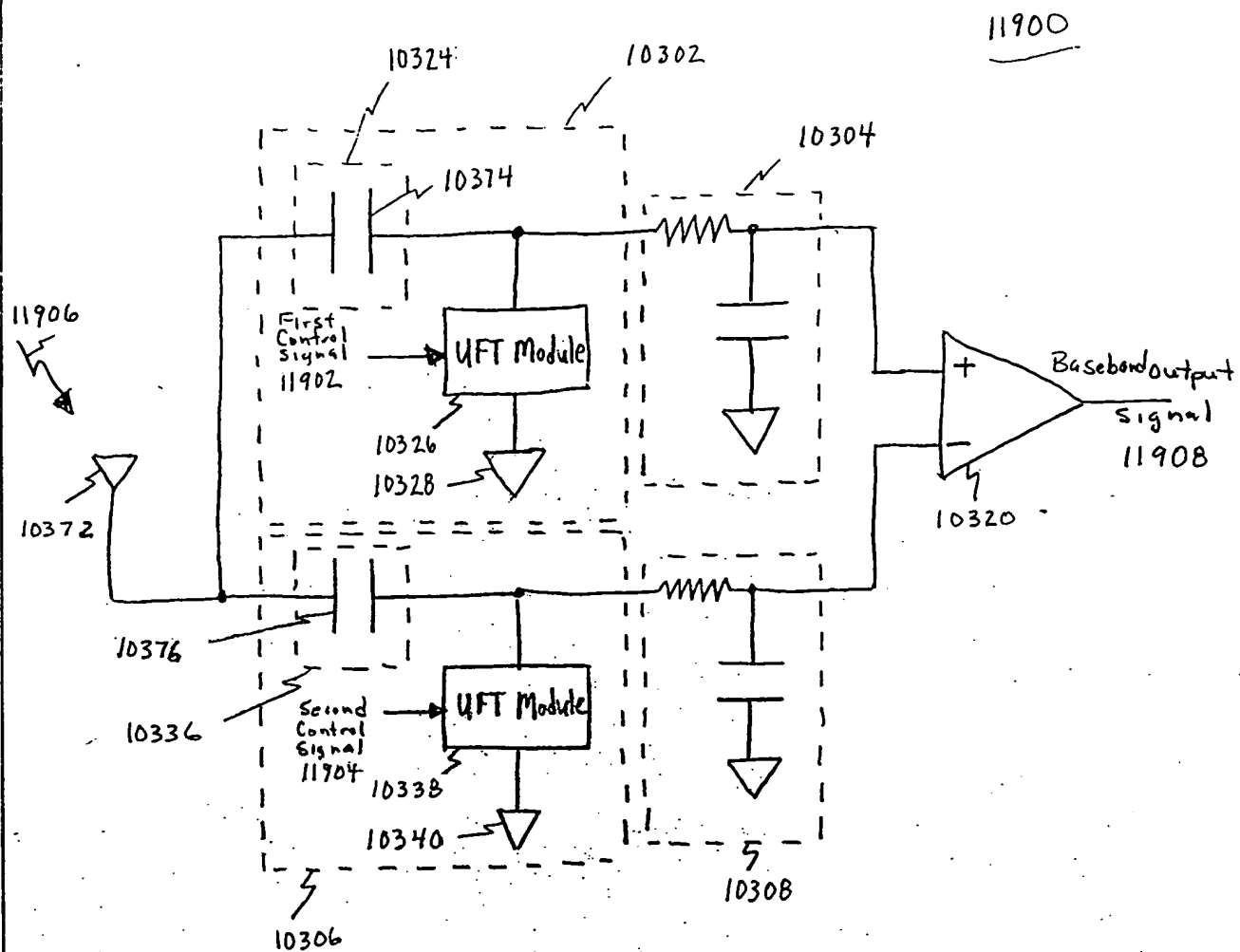
[illegible]

FIG. 119

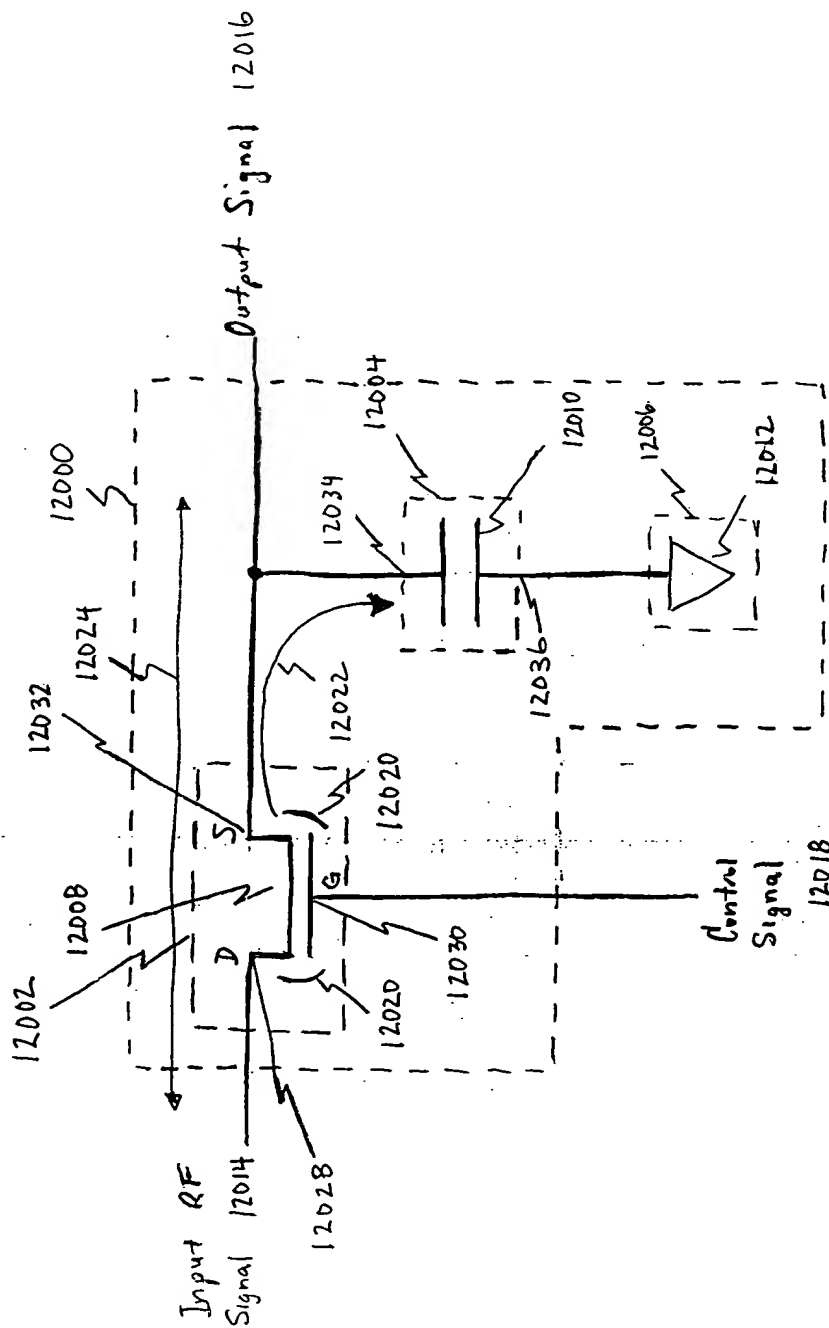


FIG. 120

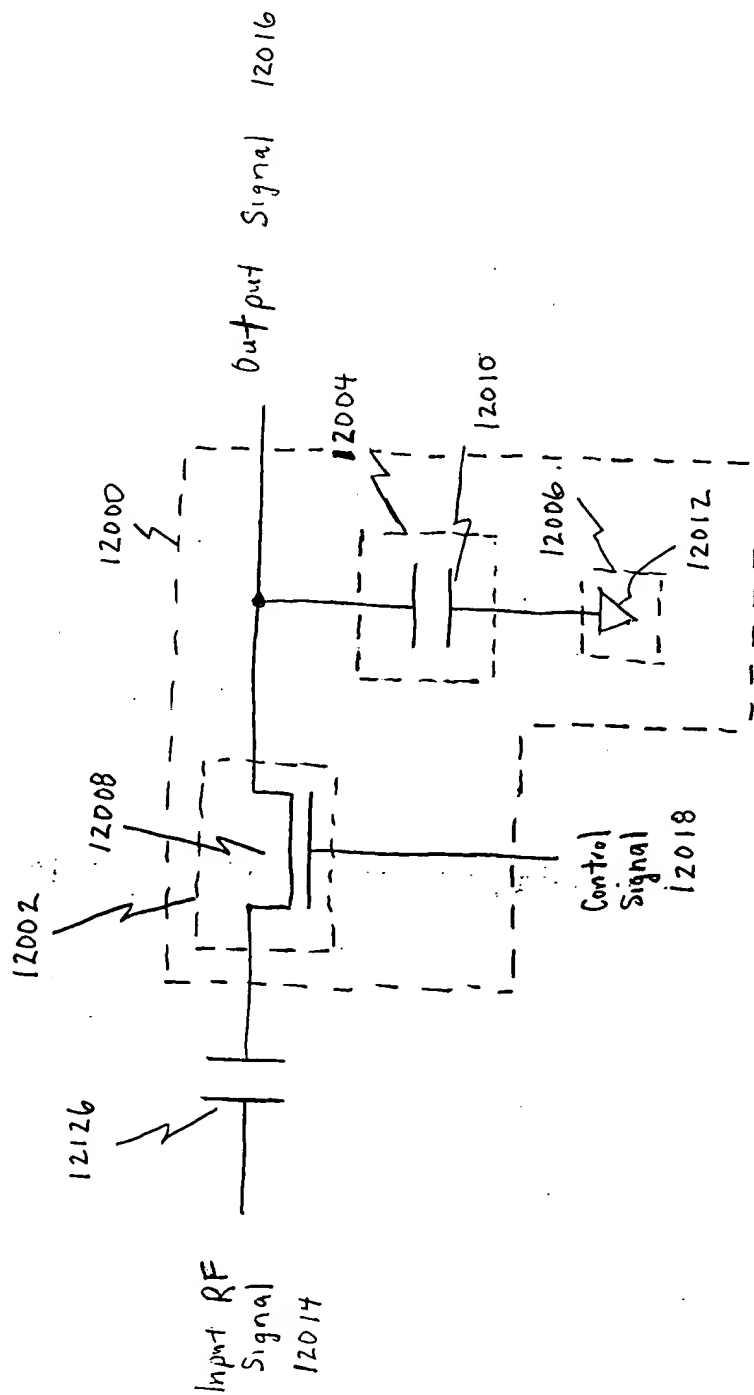


FIG. 121

004030-2532650

12200

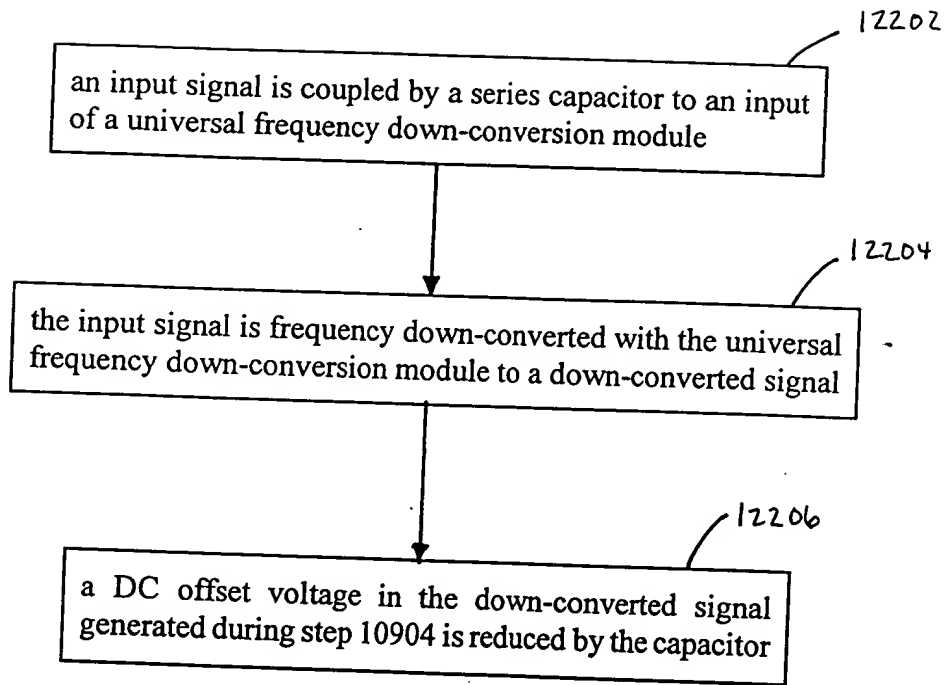


FIG. 122

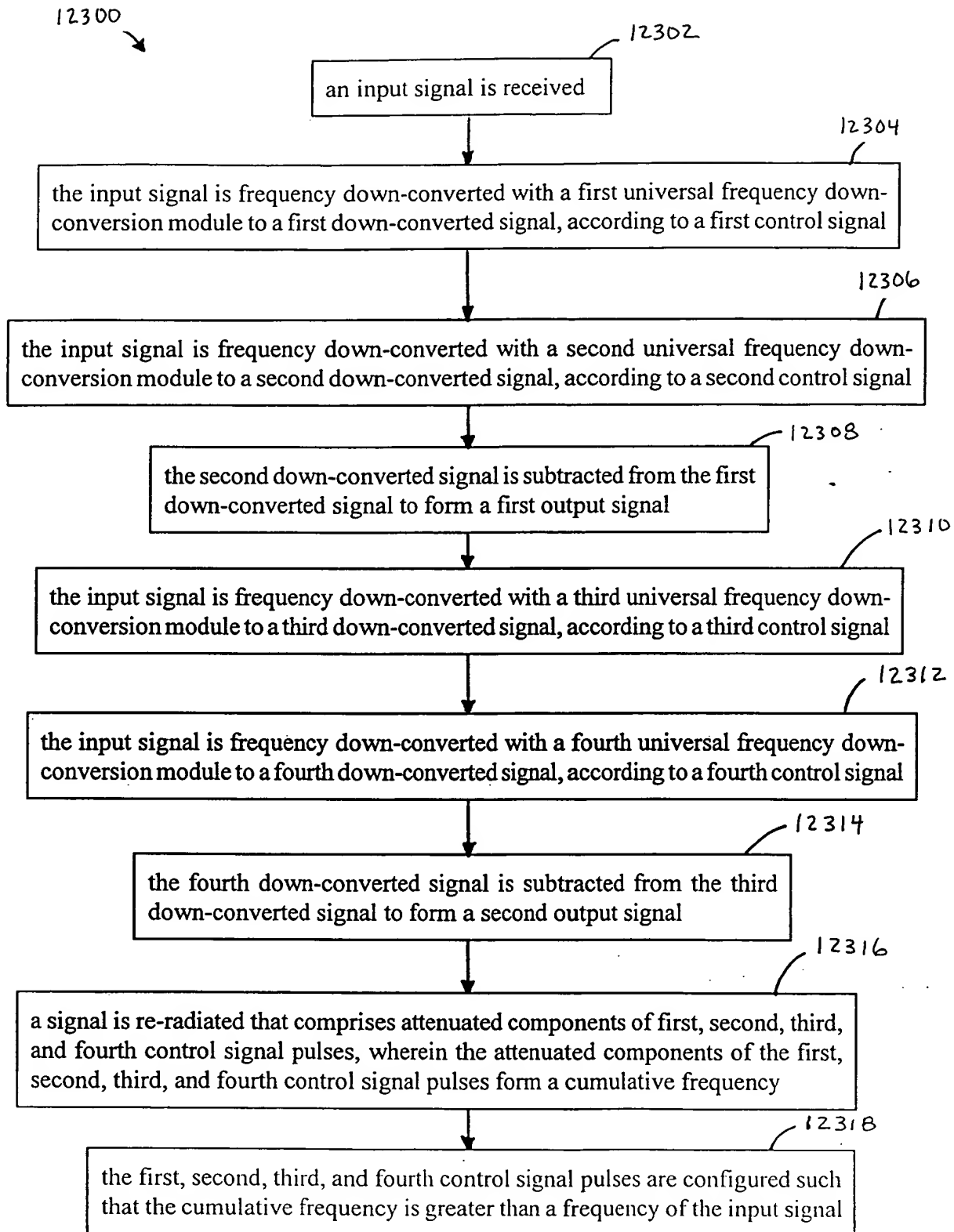


FIG. 123

09632657-080400

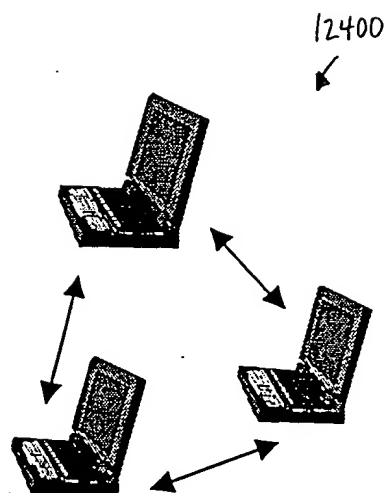


FIG. 124

09632857, 080400

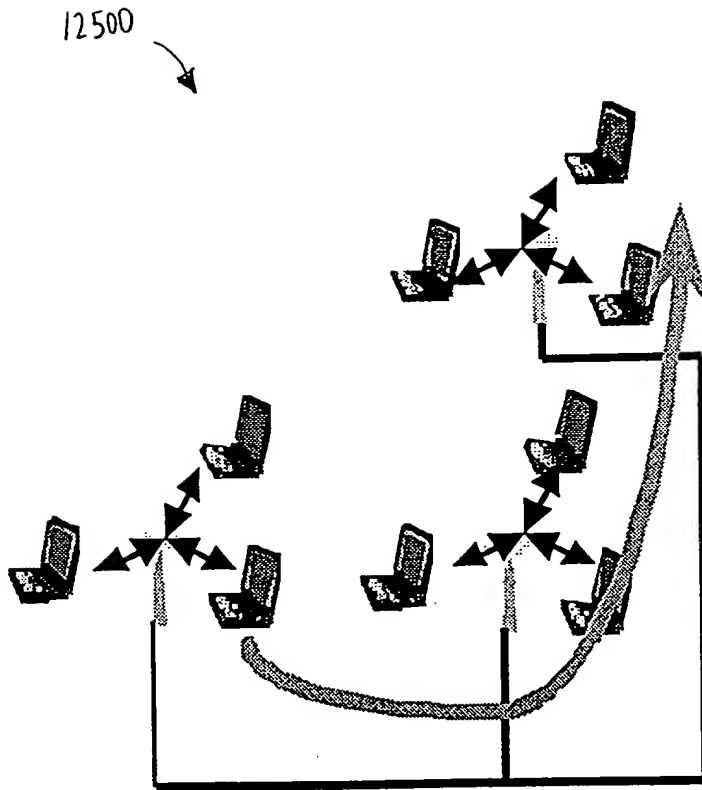


FIG. 125

004030 2525950

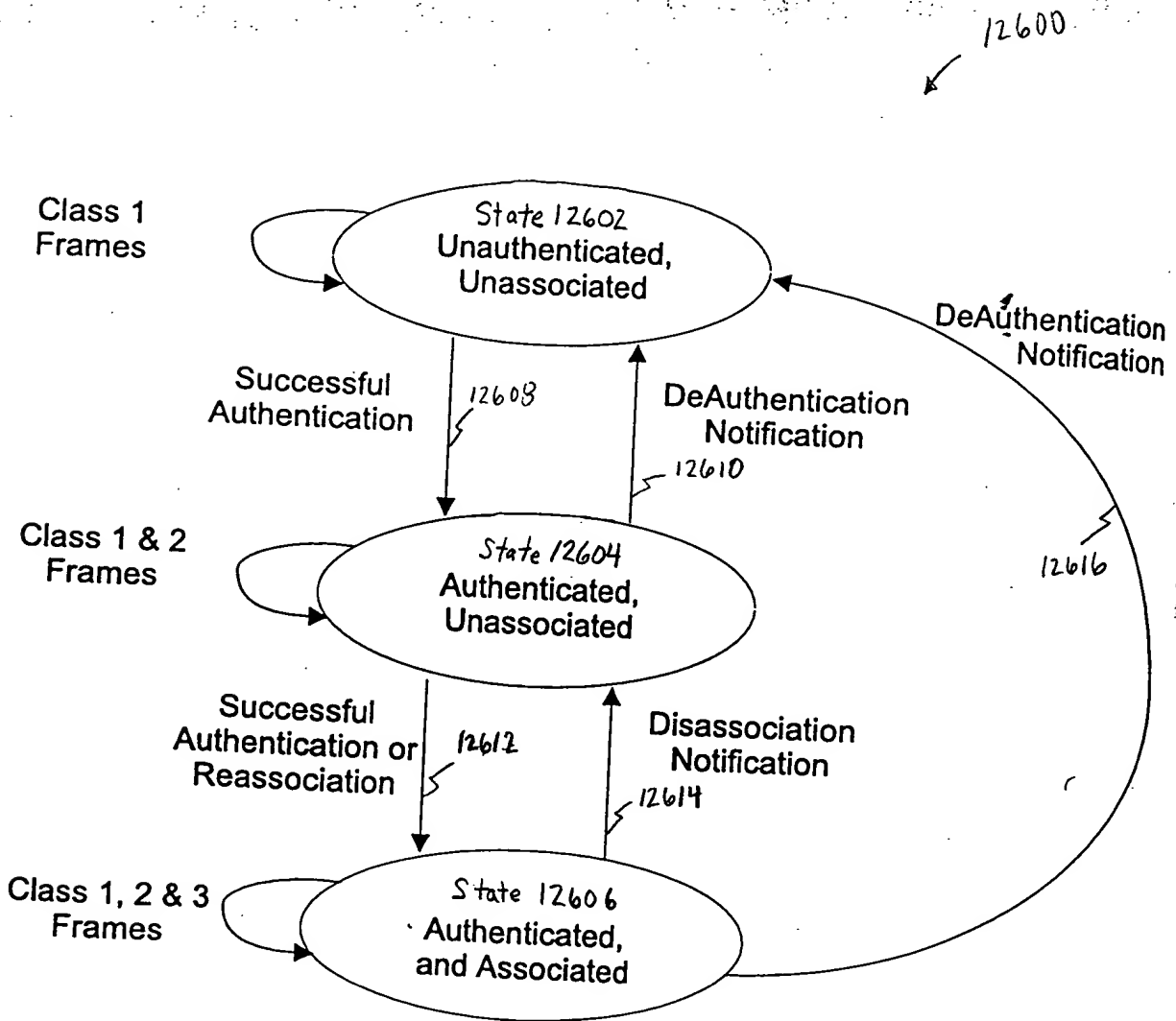


FIG. 126

004020" 25825950

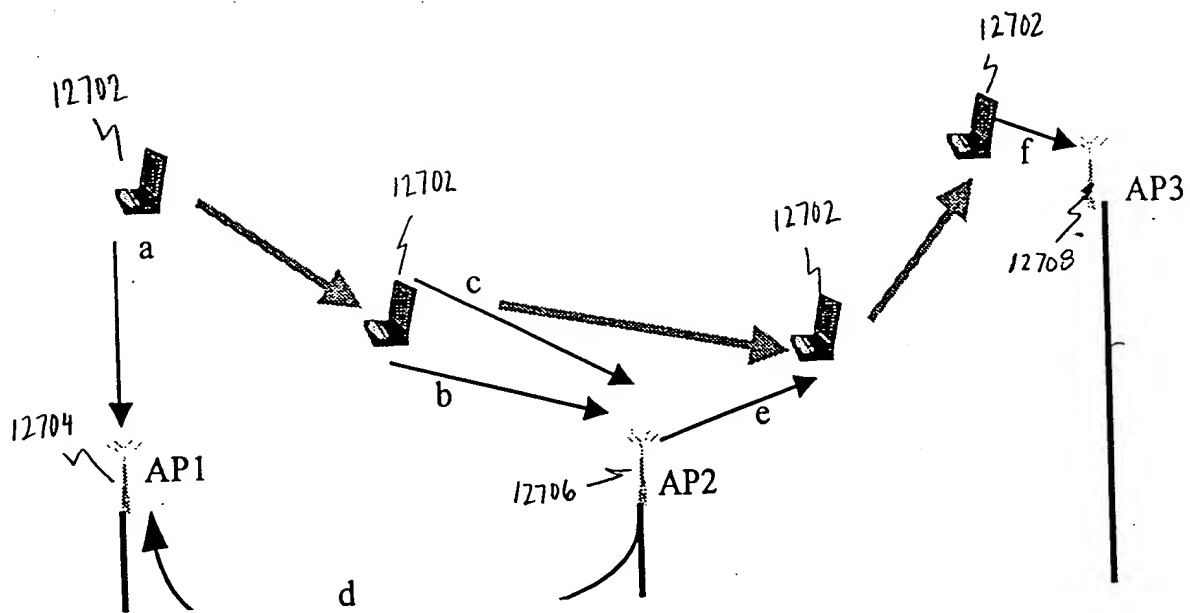


FIG. 127

09032857 000400

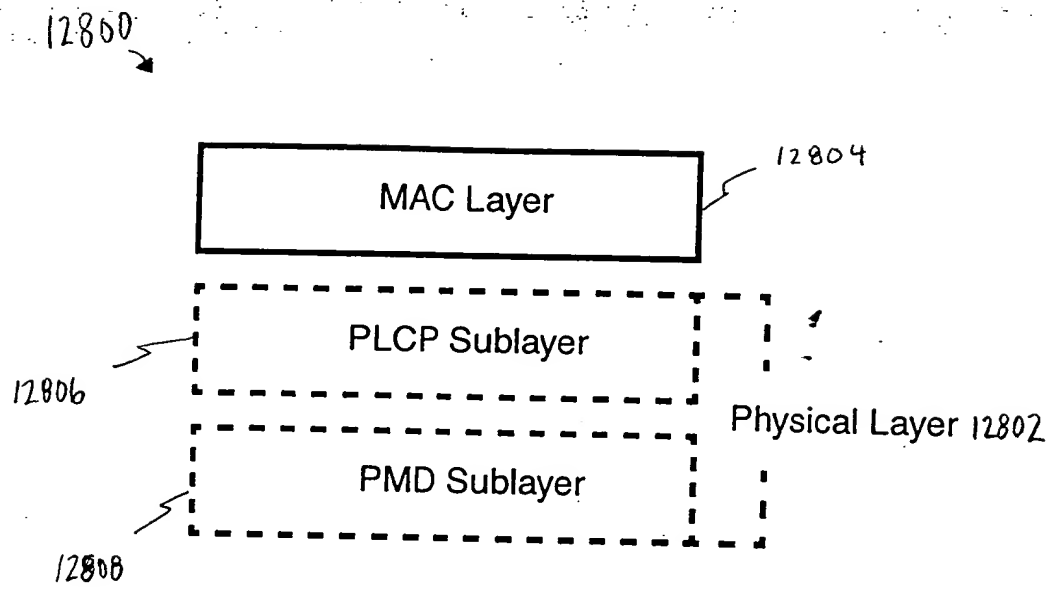


FIG. 128A

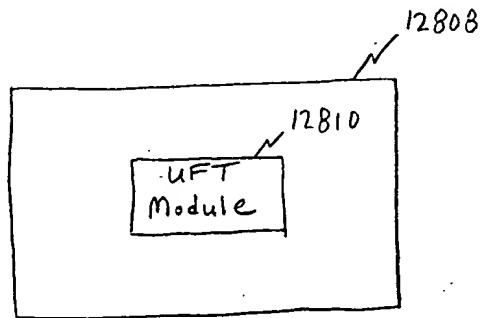


FIG. 128B

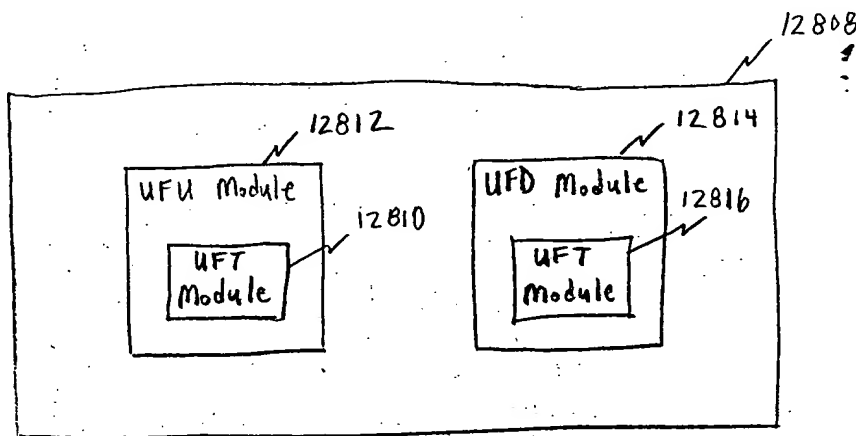


FIG. 128C

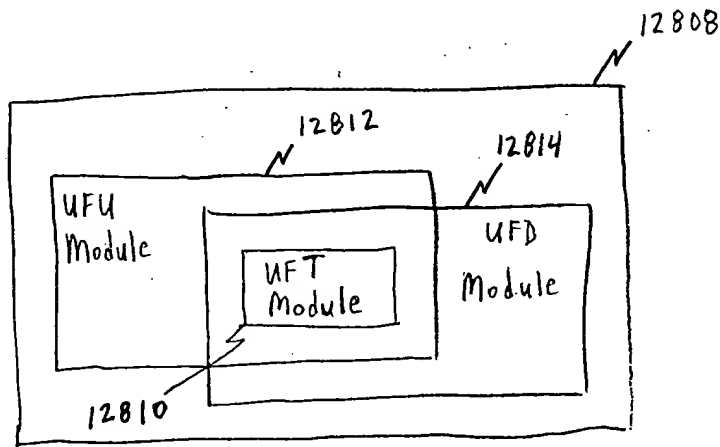


FIG. 128D

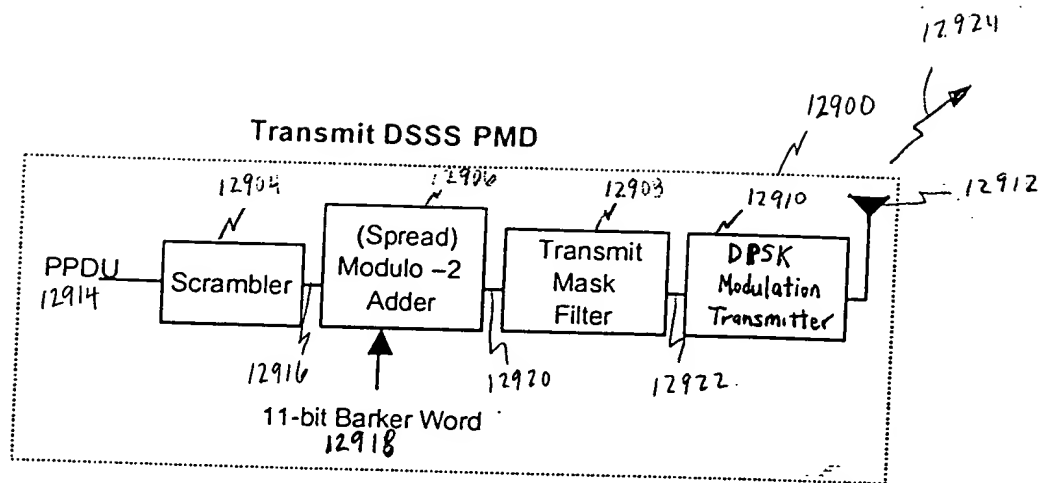


FIG. 129A

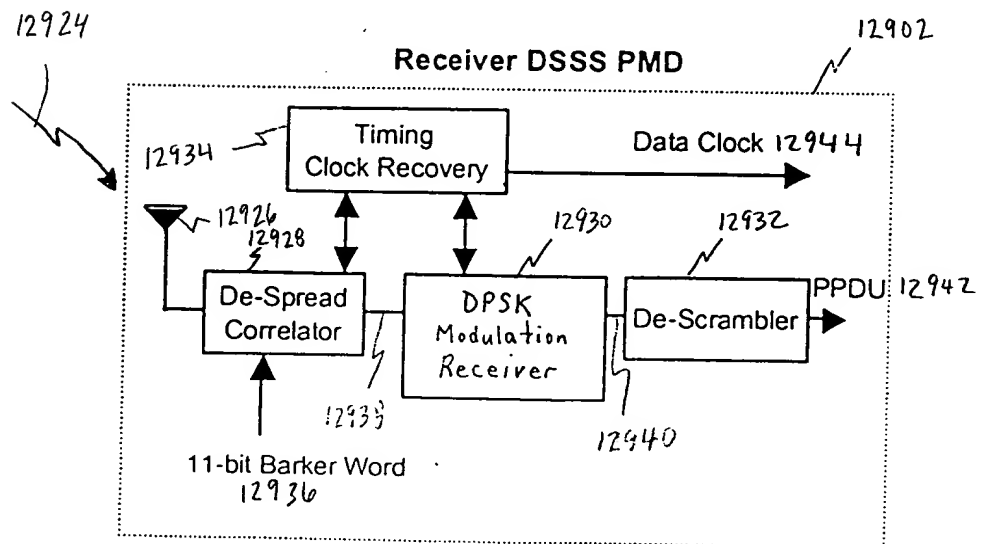


FIG. 129B

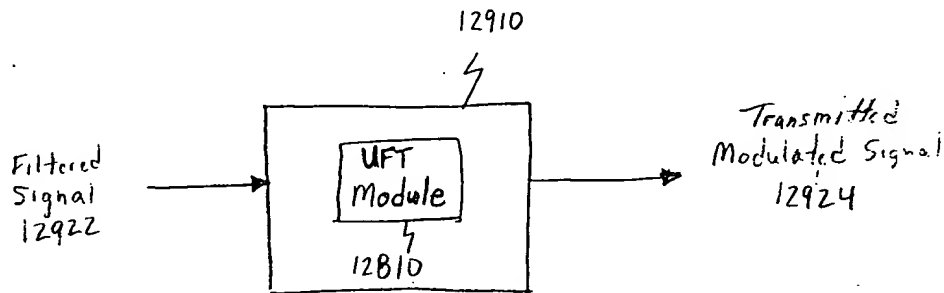


FIG. 129C

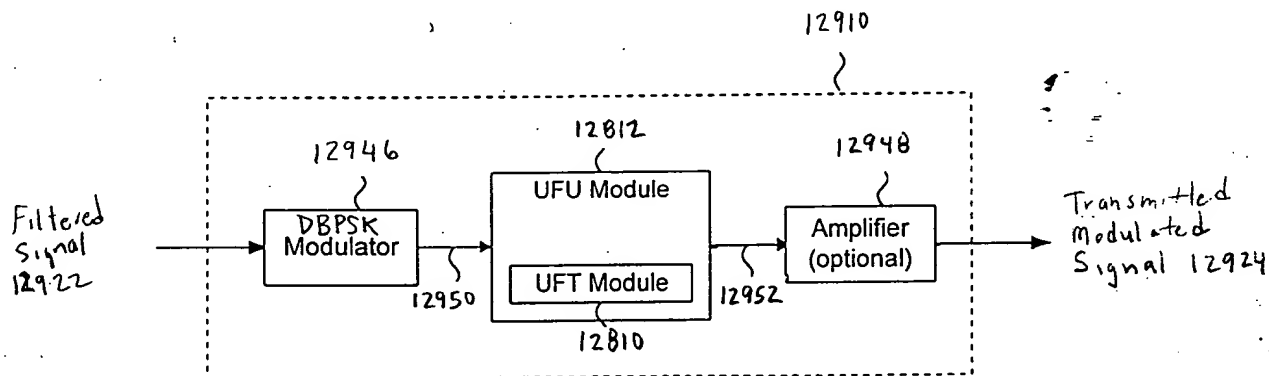


FIG. 129D

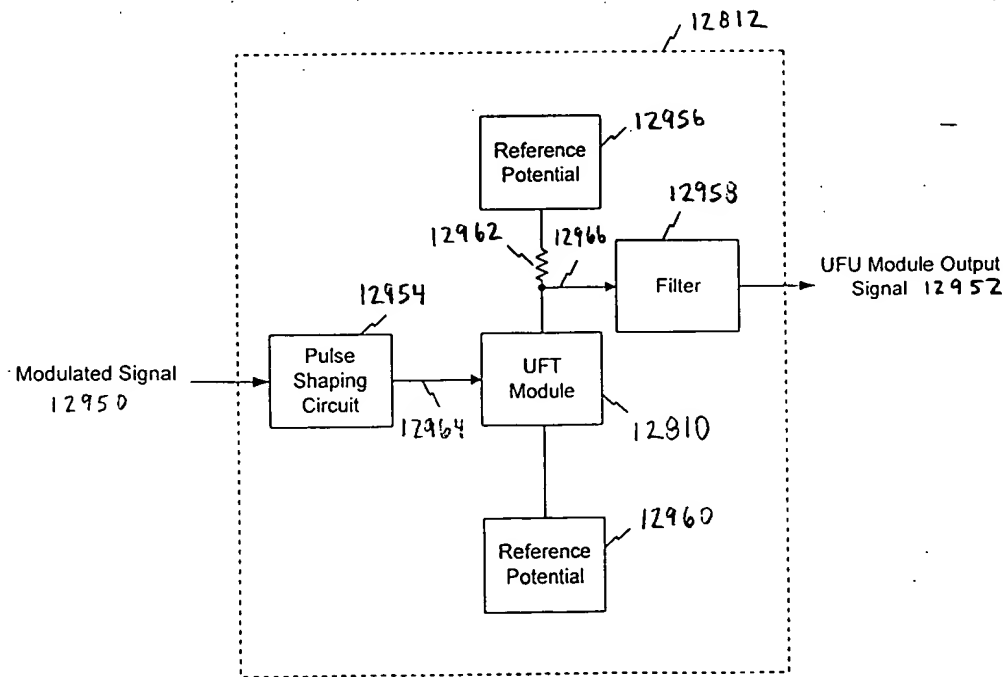


FIG. 129E

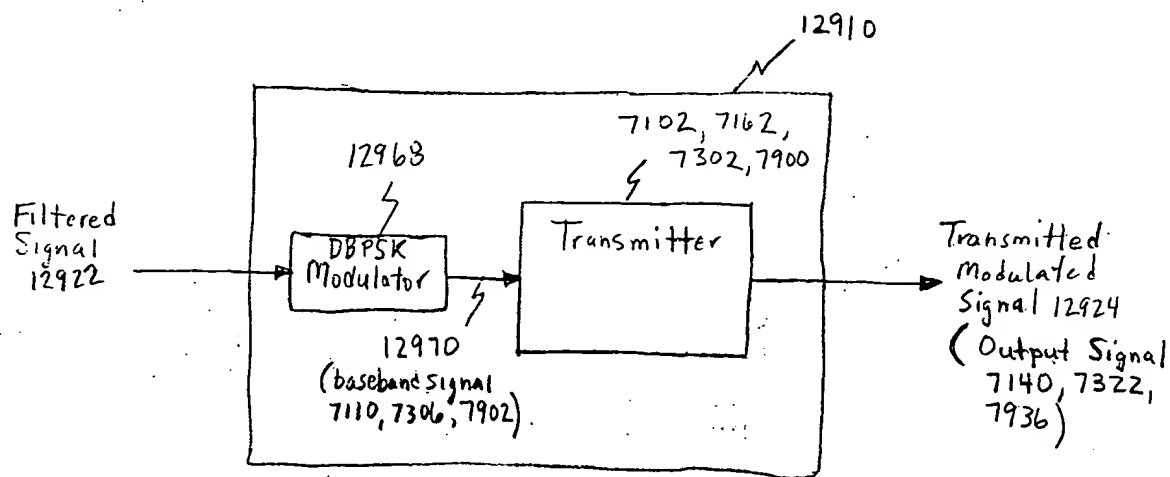


FIG. 129F

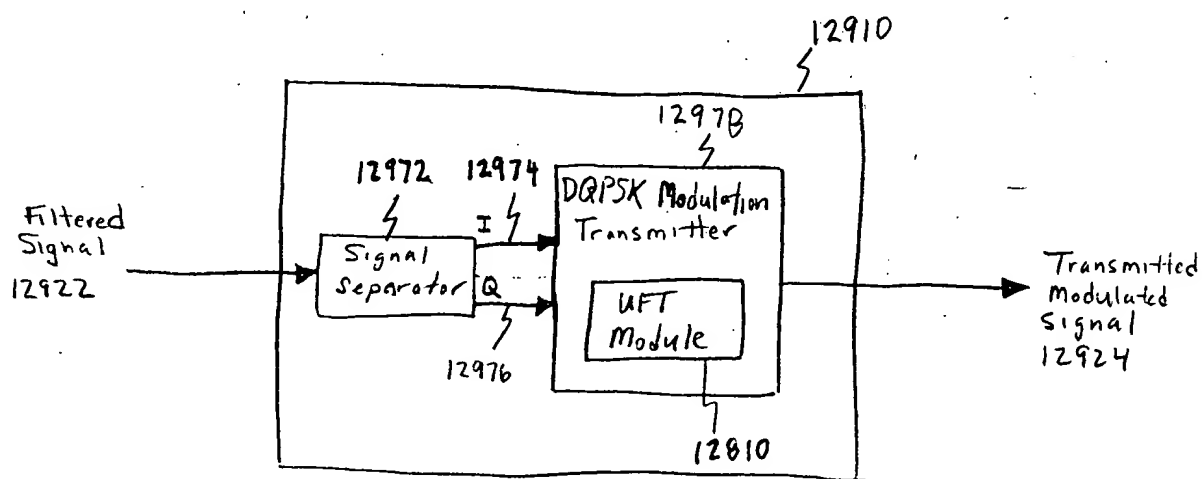


FIG. 129G

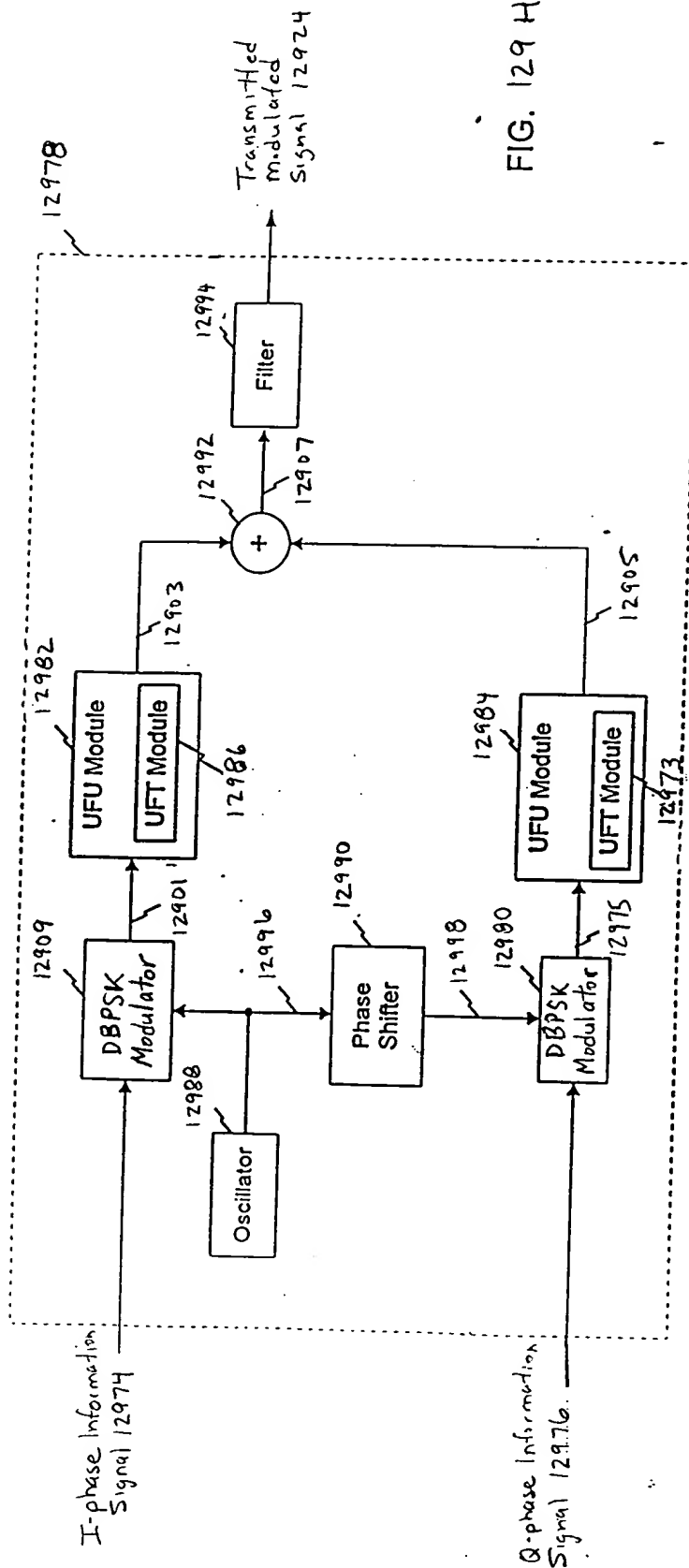
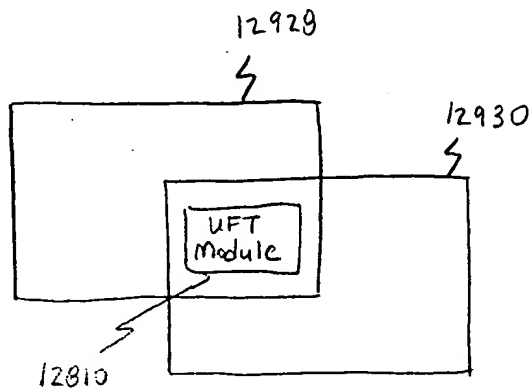
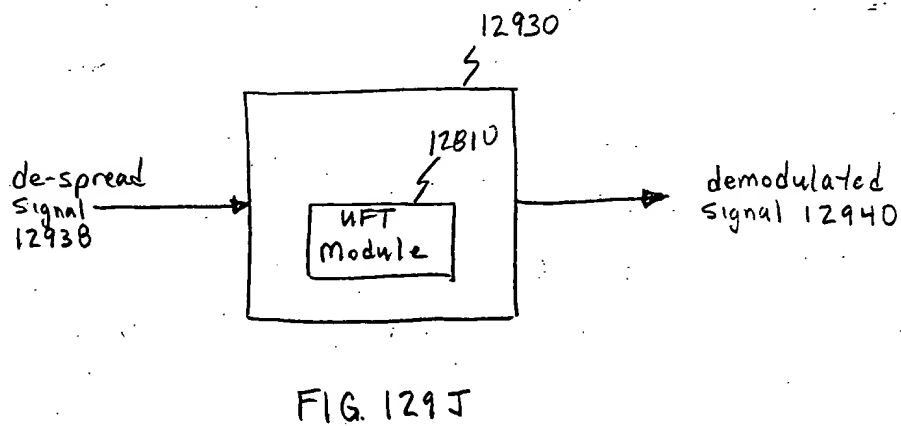
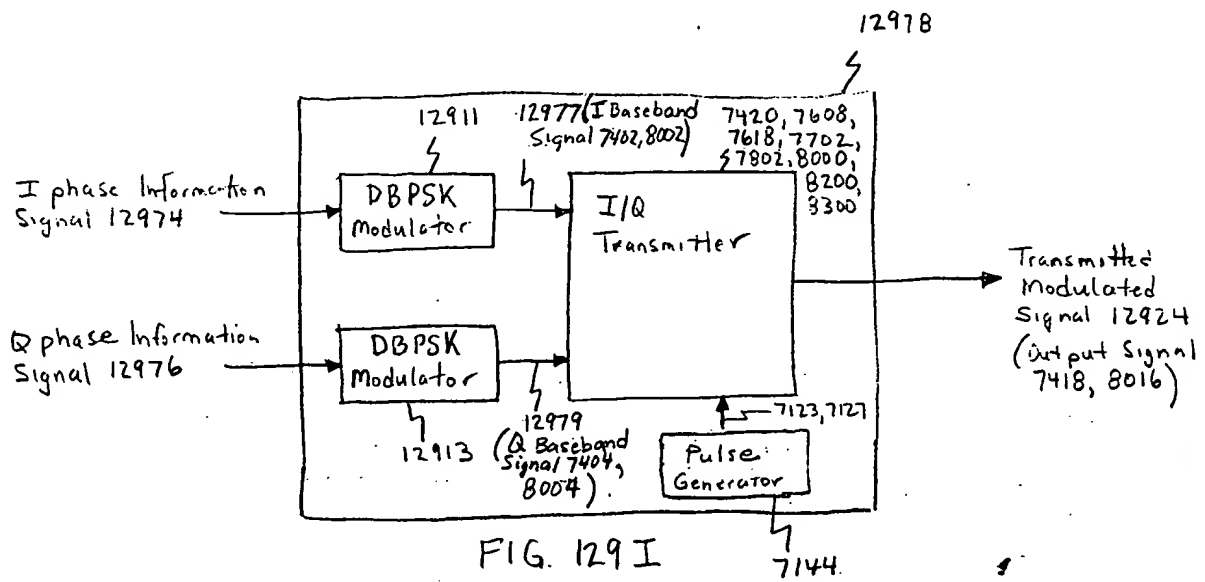


FIG. 129H



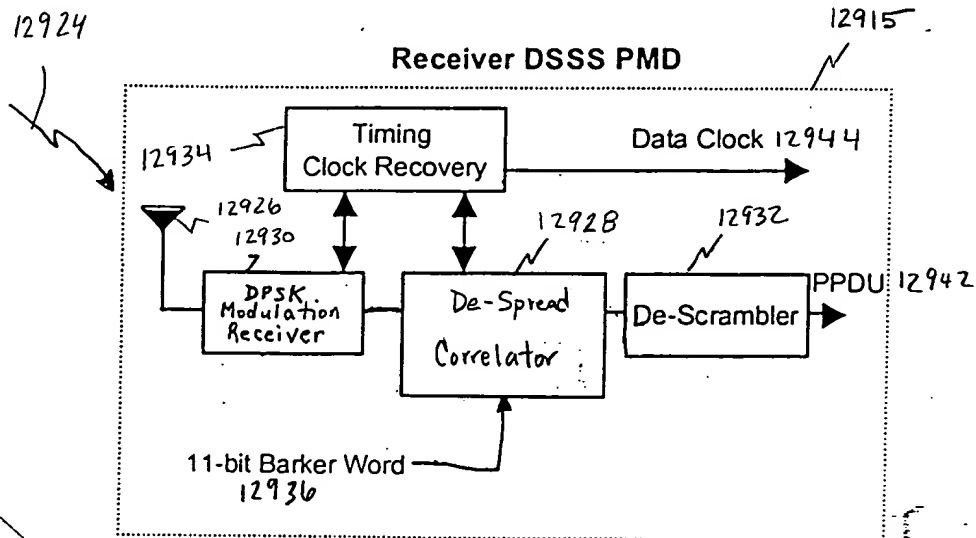


FIG. 129 L

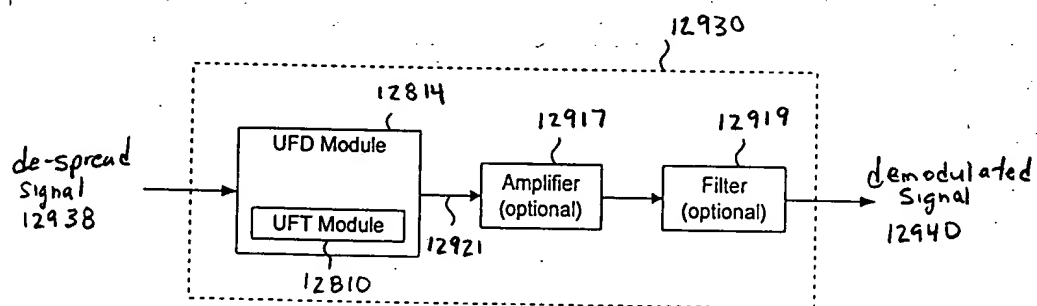


FIG. 129 M

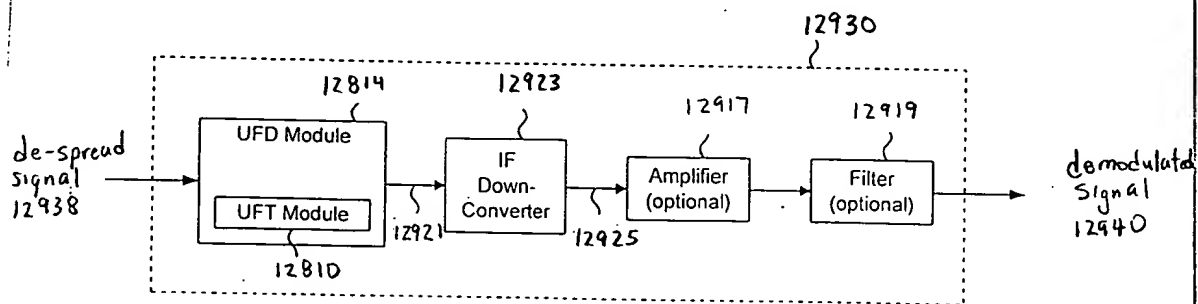


FIG. 129 N

004090-08400

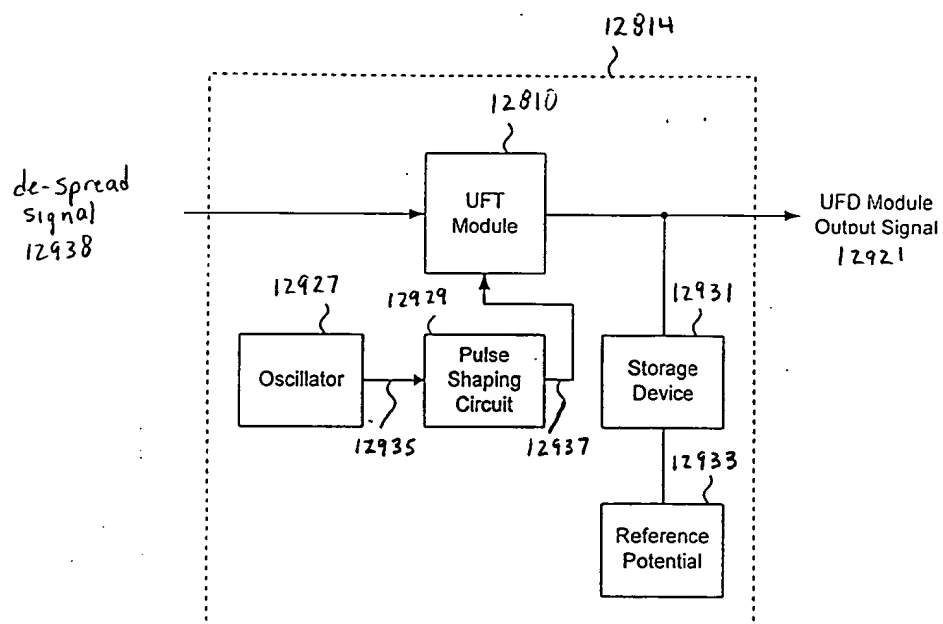


FIG. 1290

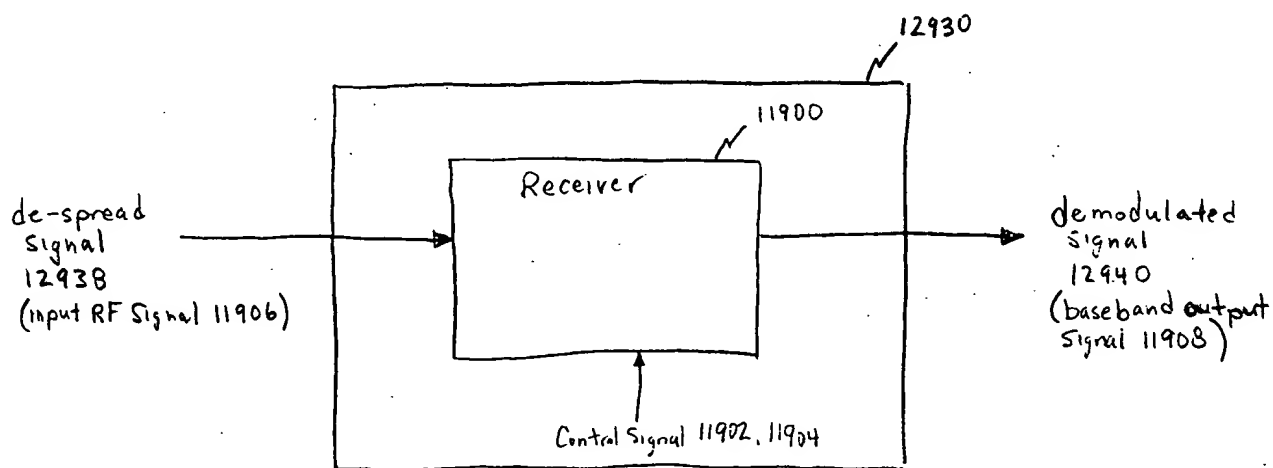


FIG. 129P

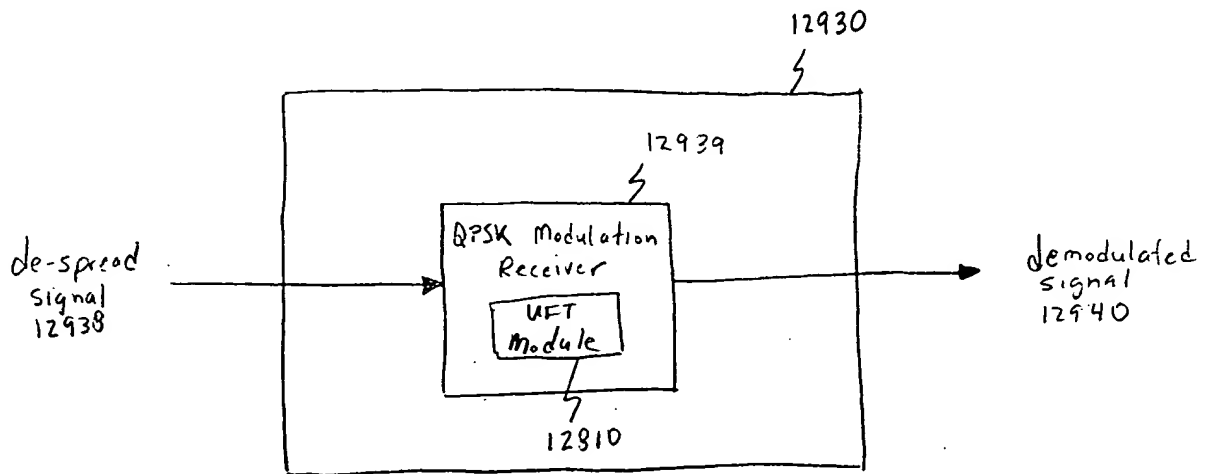


FIG. 129 Q

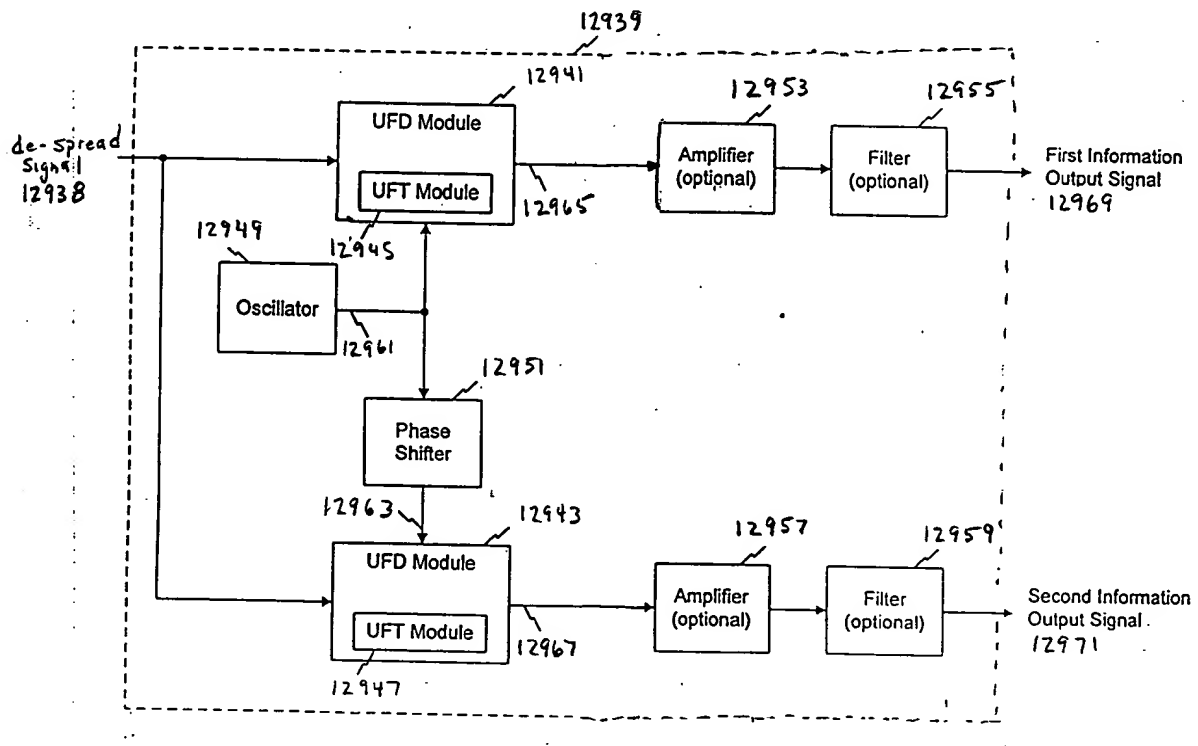


FIG. 129 R

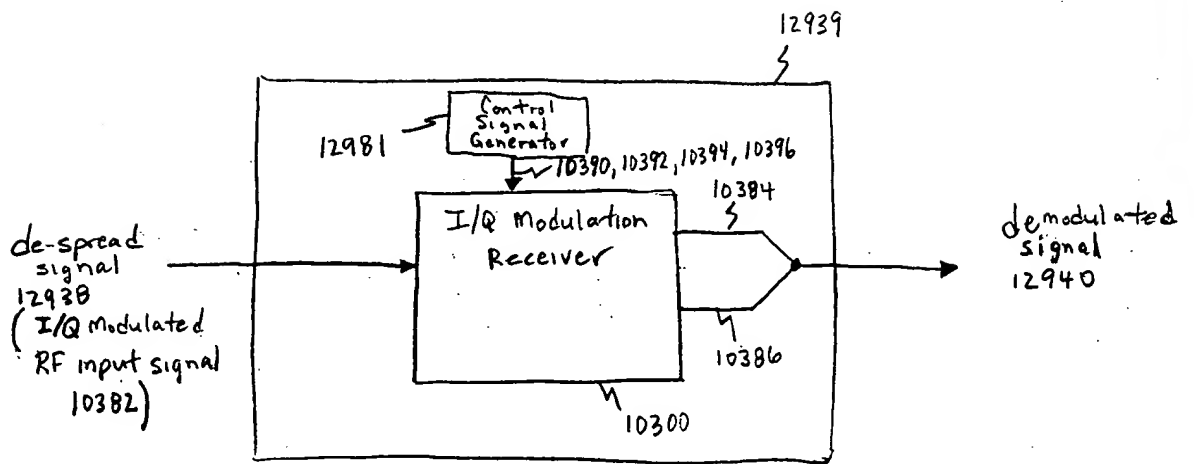


FIG. 1295

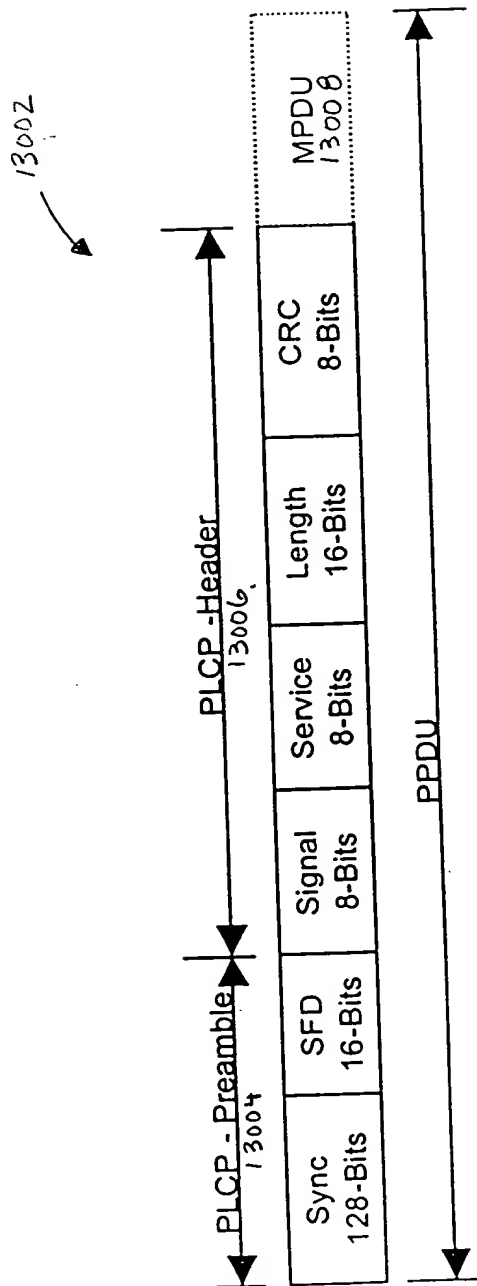


FIG. 130

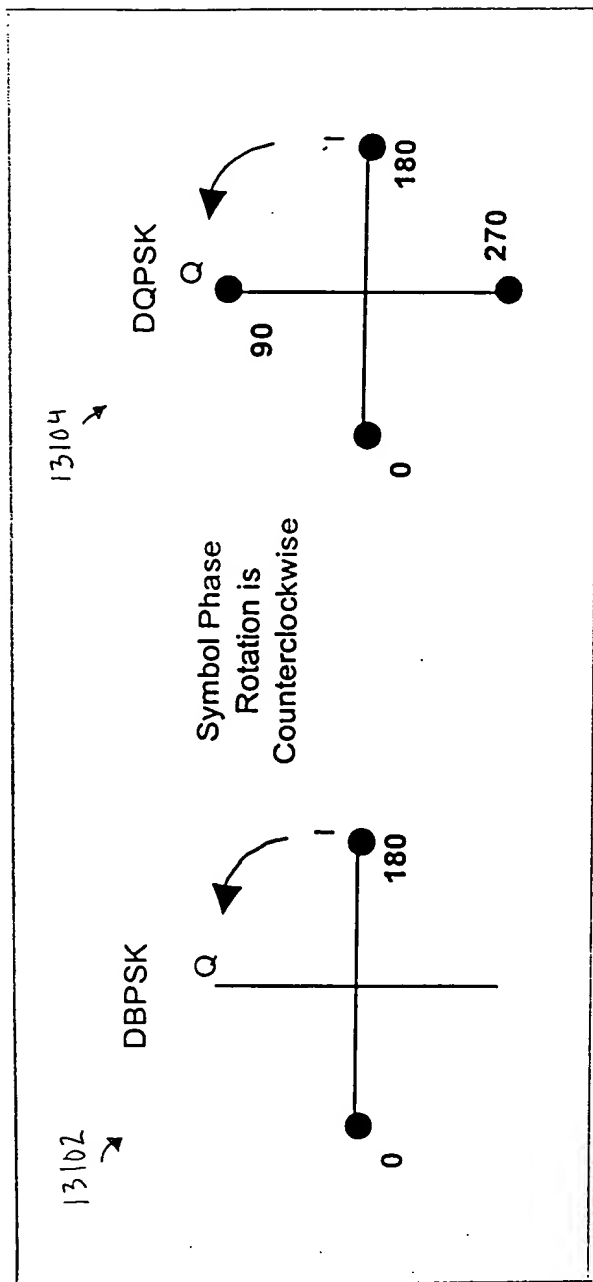


FIG. 131

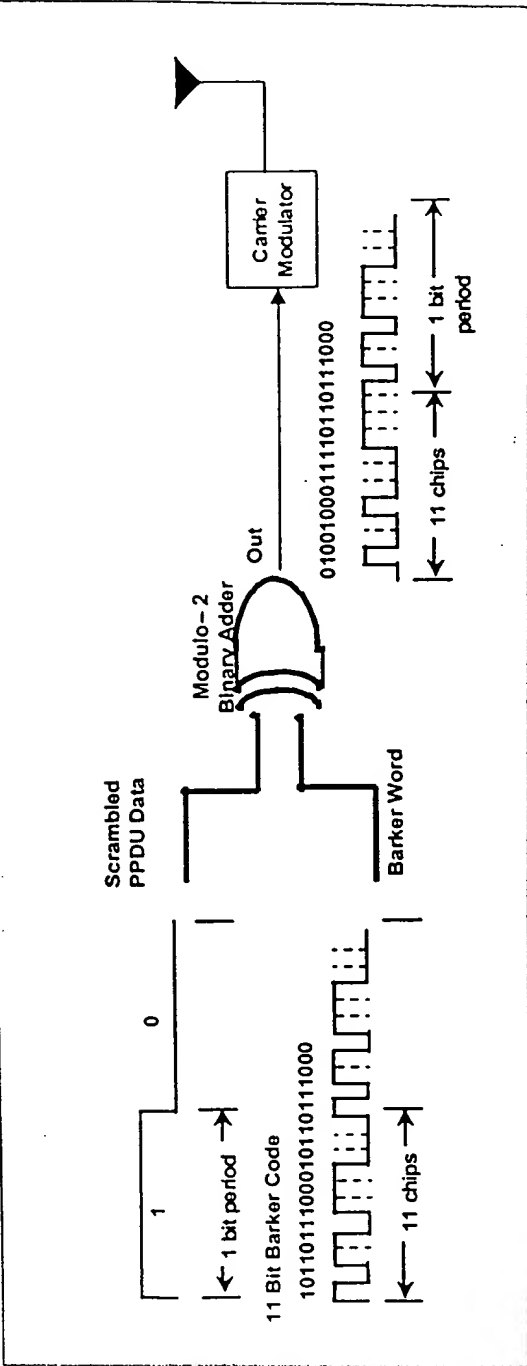
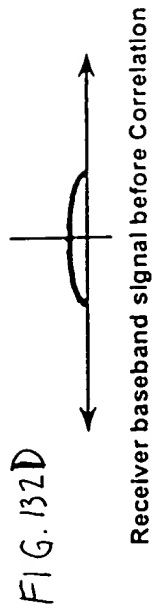


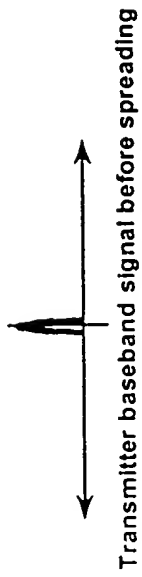
FIG. 132A



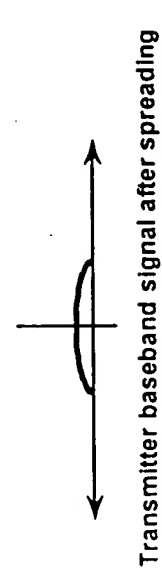
Receiver baseband signal before Correlation



Receiver baseband signal after Correlation



Transmitter baseband signal before spreading



Transmitter baseband signal after spreading

FIG. 132B

FIG. 132C

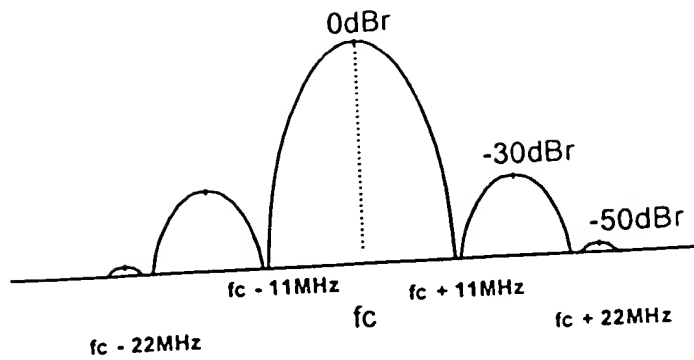


FIG. 133

Minimum
Channel spacing between
Center frequencies

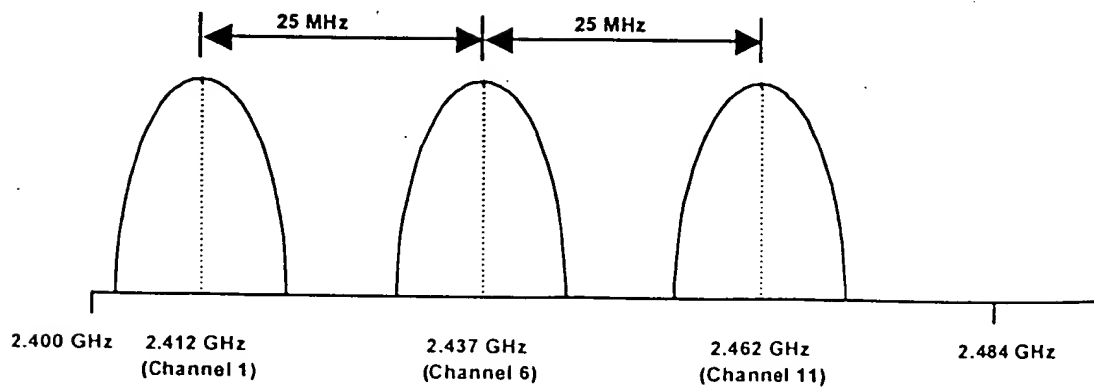


FIG. 134

004030 76926950

004030-2526350

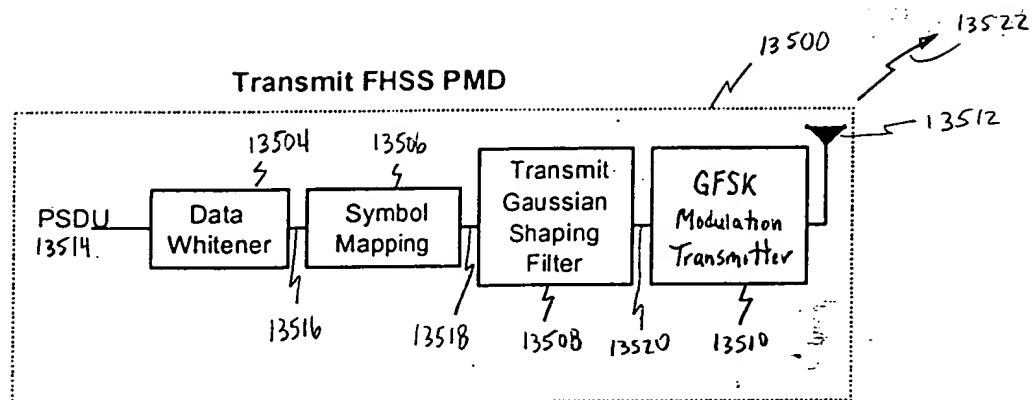


FIG. 135 A

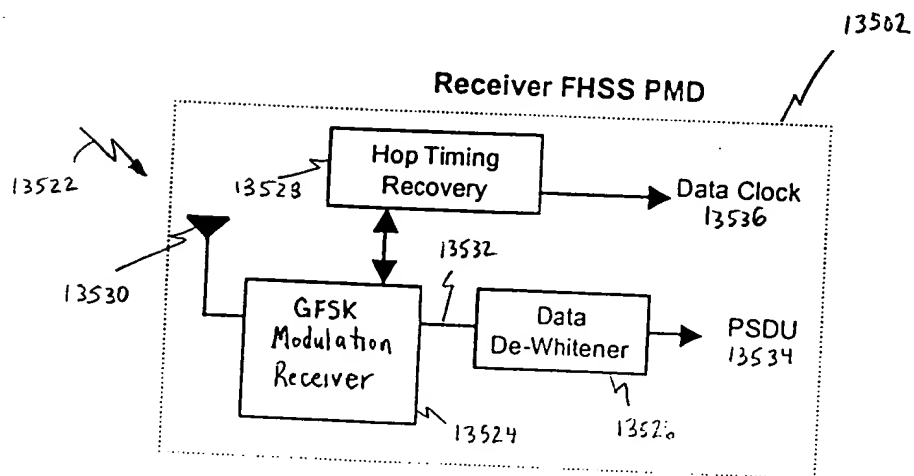


FIG. 135 B

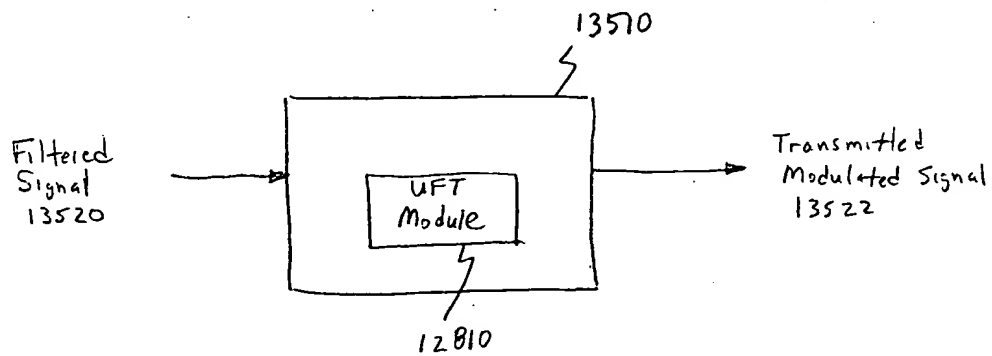


FIG. 135C

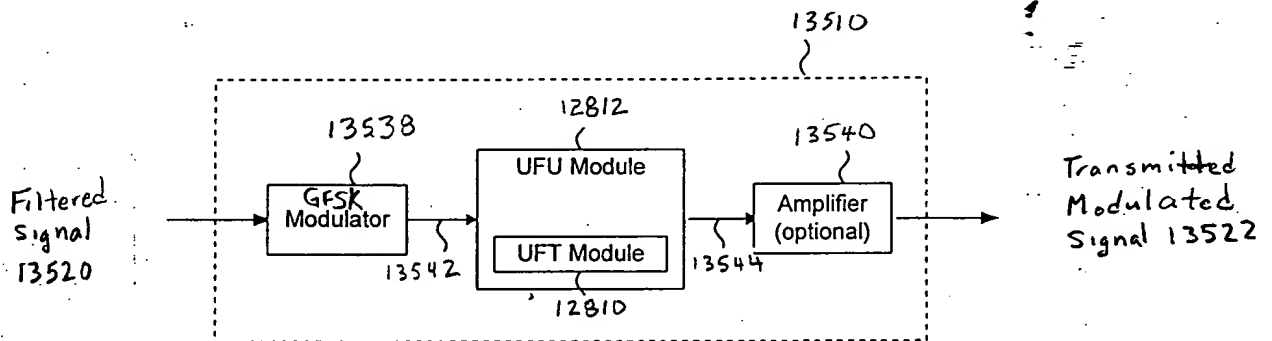


FIG. 135D

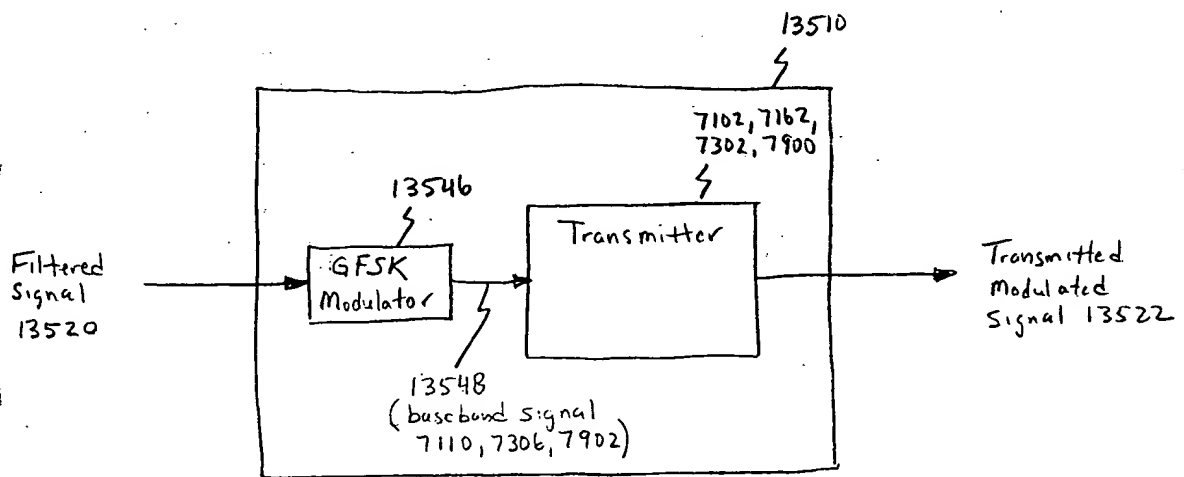


FIG. 135E

004080-25026950

13600

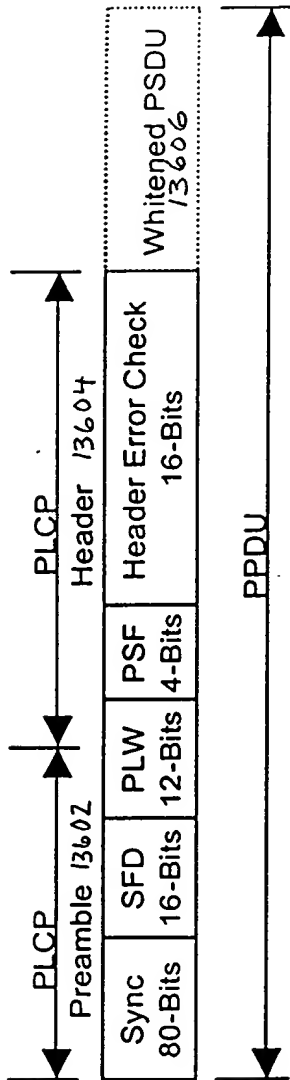


FIG. 136

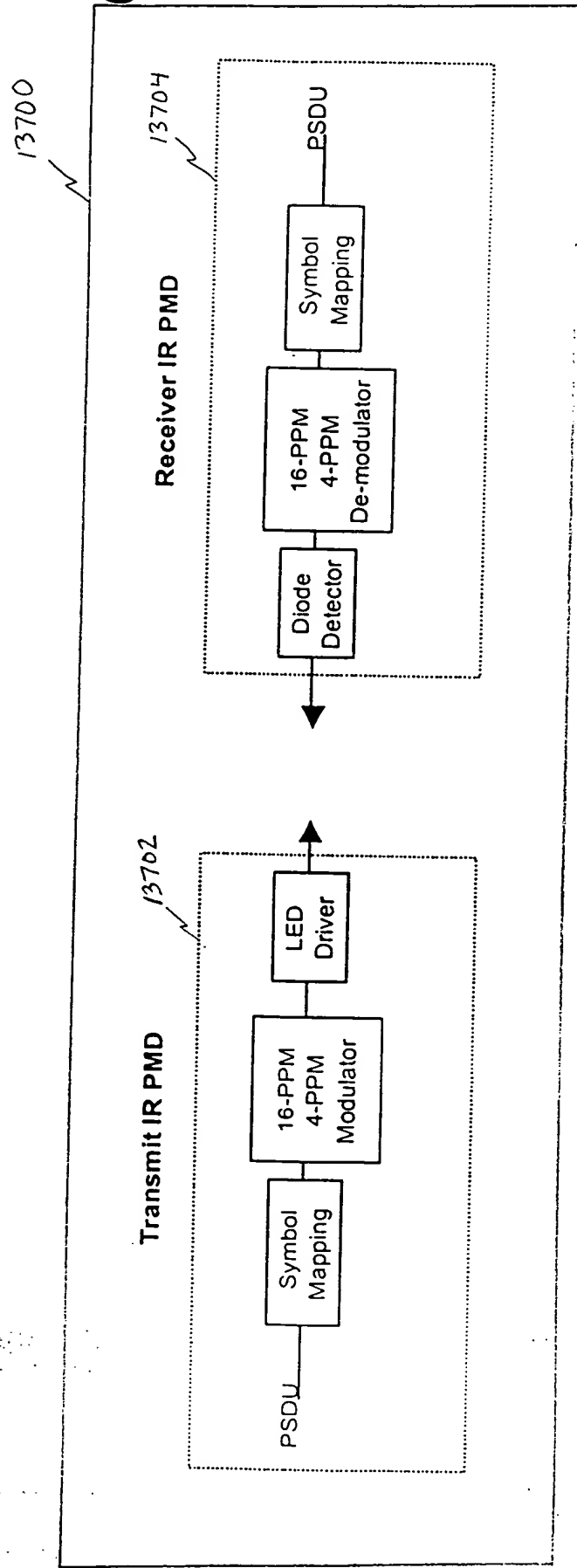


FIG. 137

13800

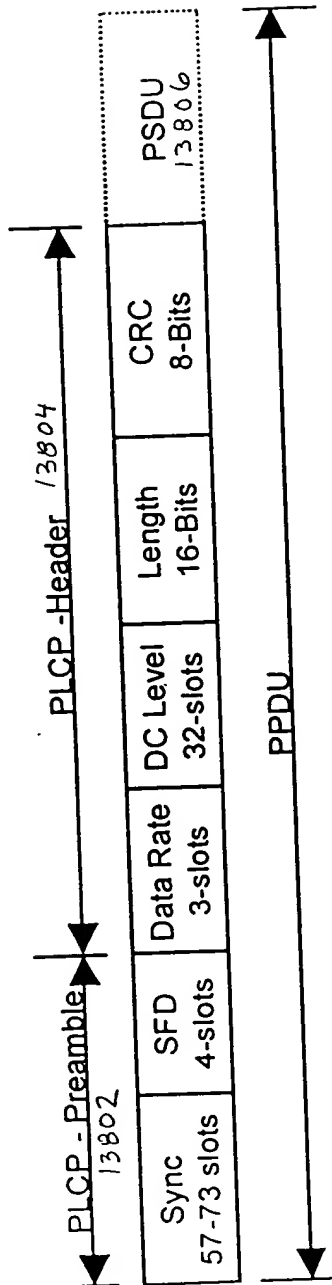


FIG. 138

13900

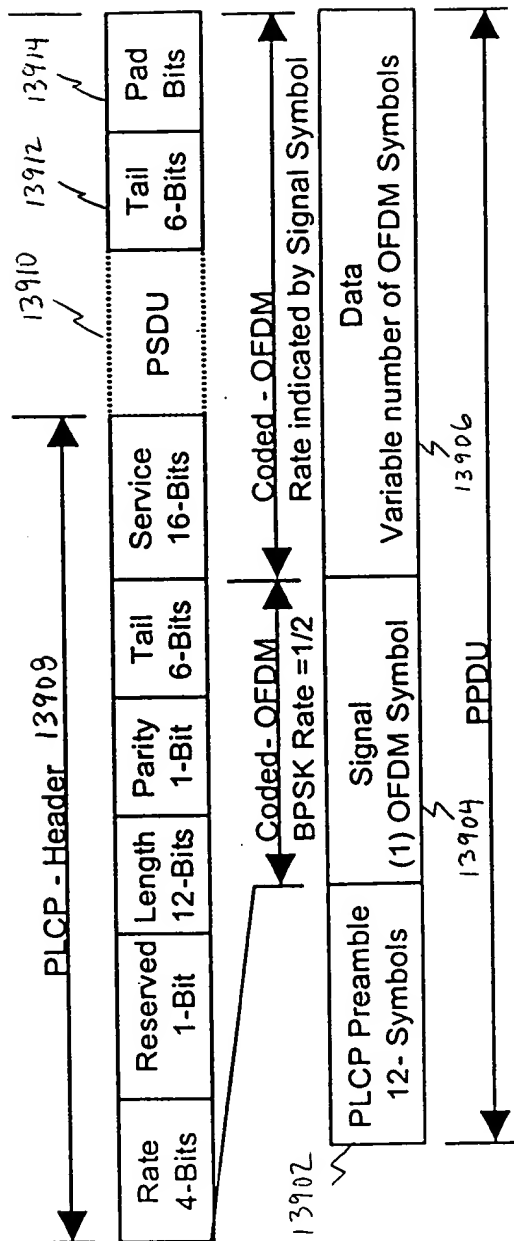


FIG. 139

09030307 000400

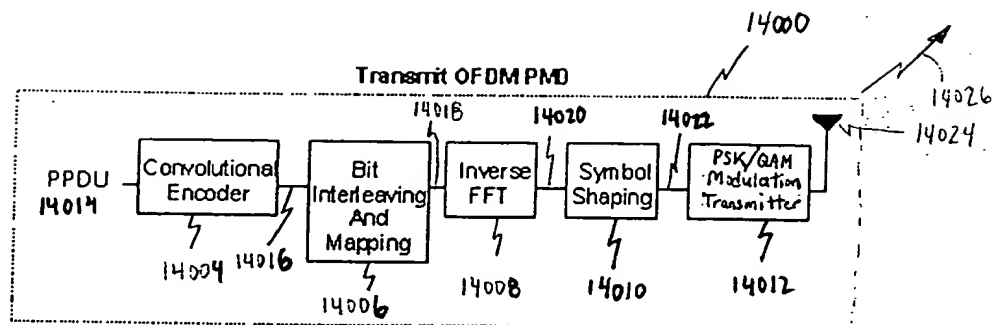


FIG. 140A

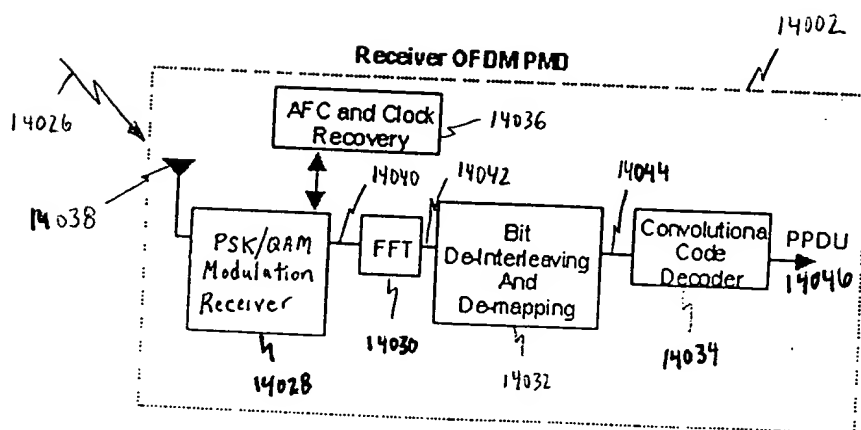


FIG. 140B

in the past, the Commission has been able to identify and address the needs of the most vulnerable populations, such as the elderly, the disabled, and the poor. The Commission has also been able to identify and address the needs of the most vulnerable populations, such as the elderly, the disabled, and the poor.

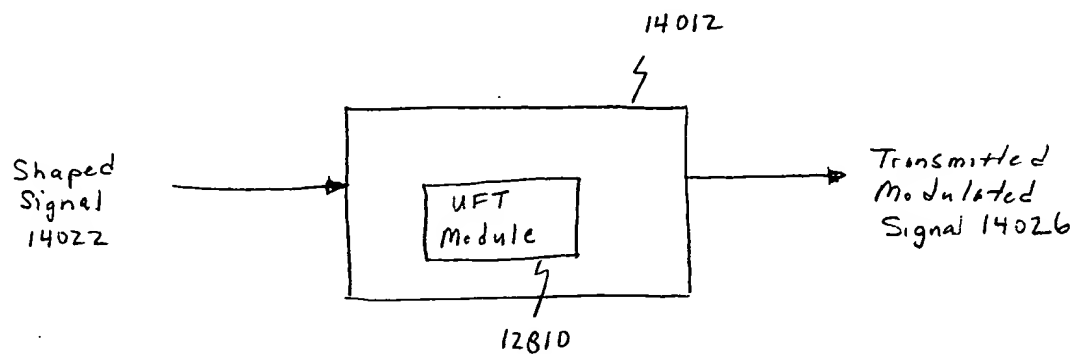


FIG. 140 C

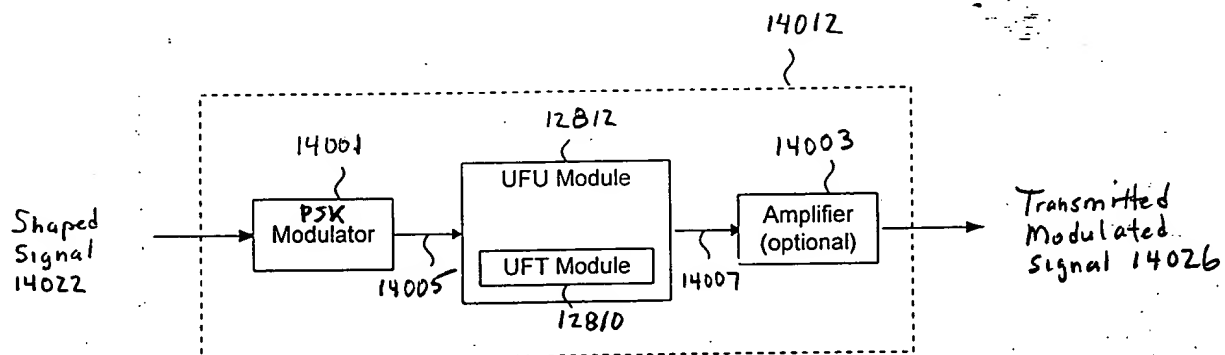


FIG. 140D

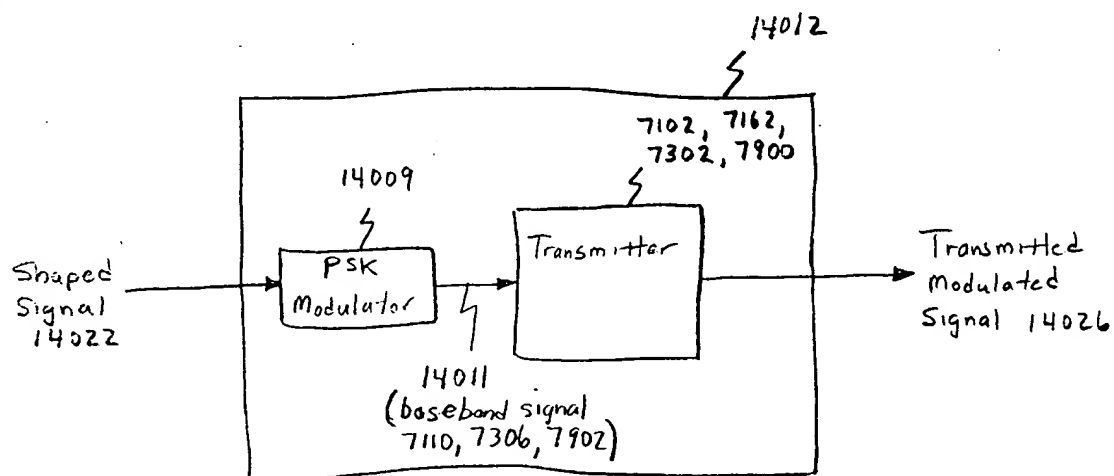


FIG. 140E

004030 622660

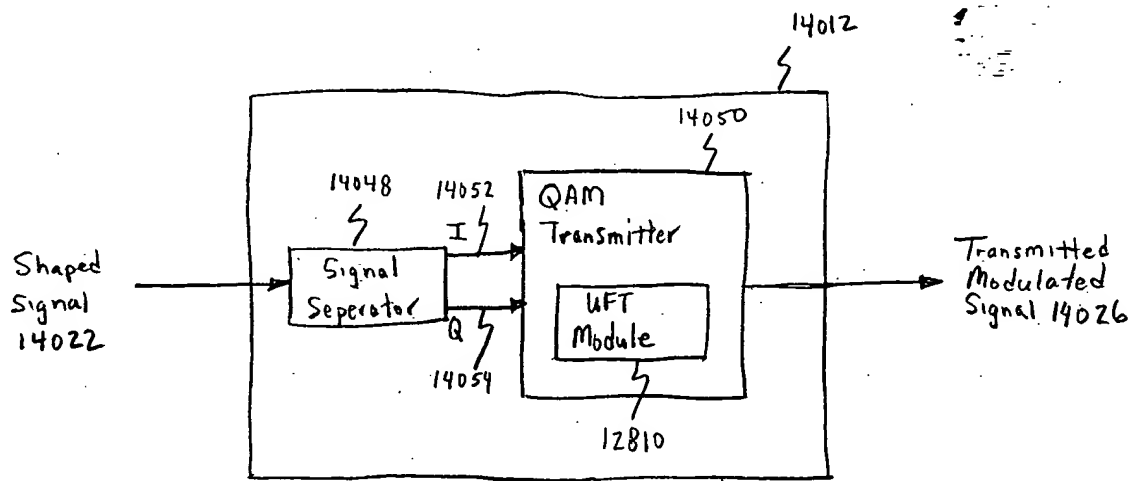


FIG. 140F

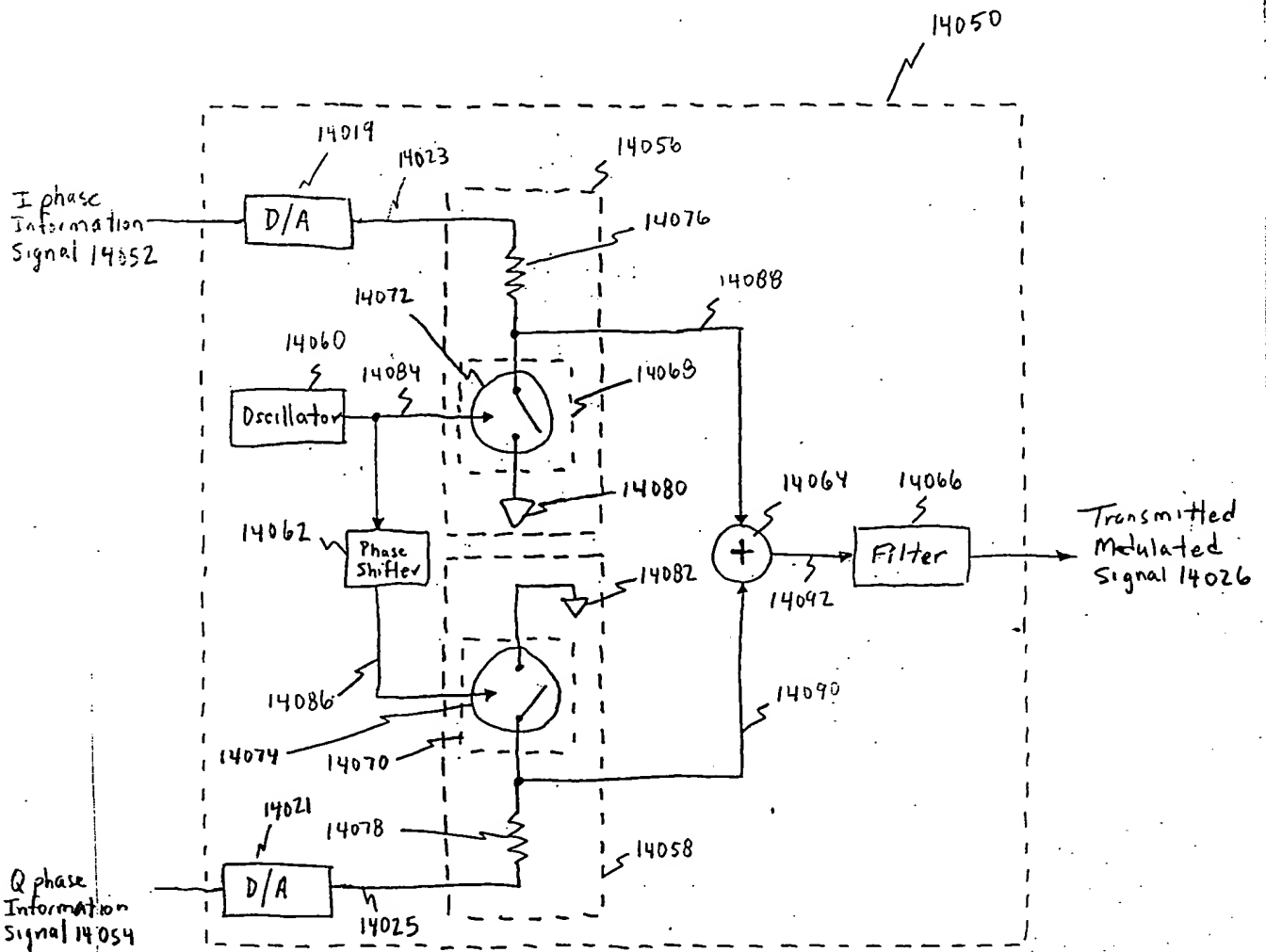


FIG. 140 G

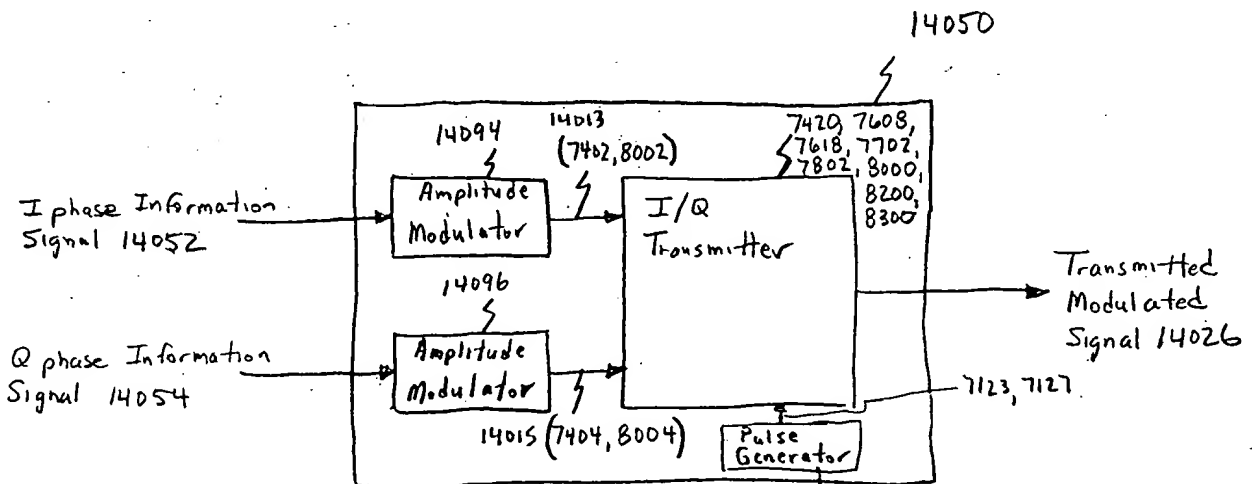


FIG. 140 H

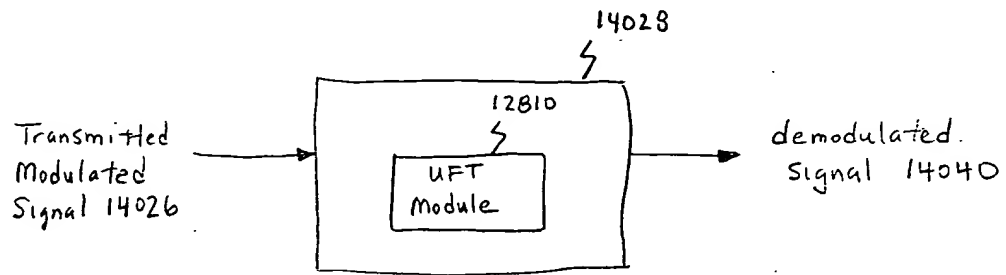


FIG. 140 I

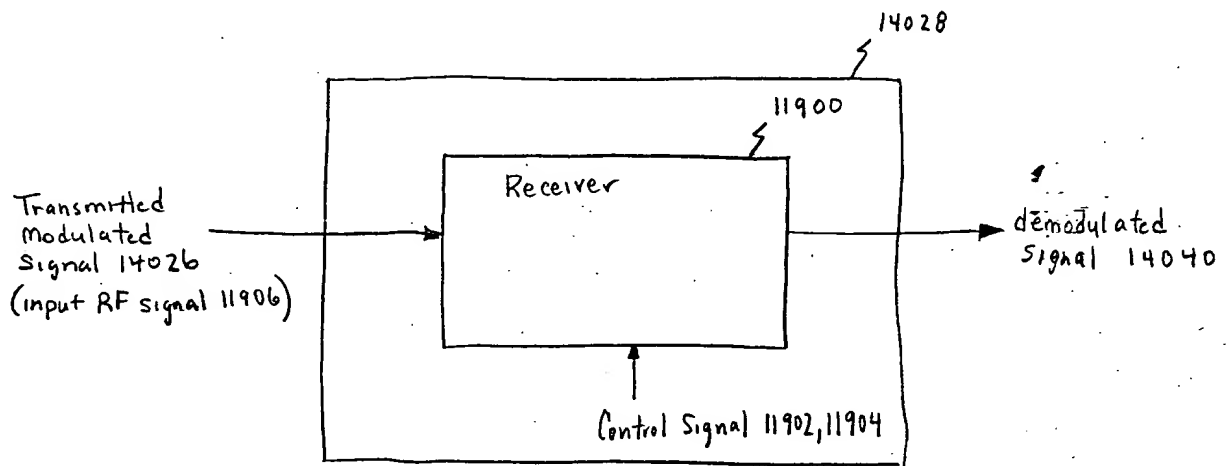


FIG. 140 J

004039 2625950

004030 2523550

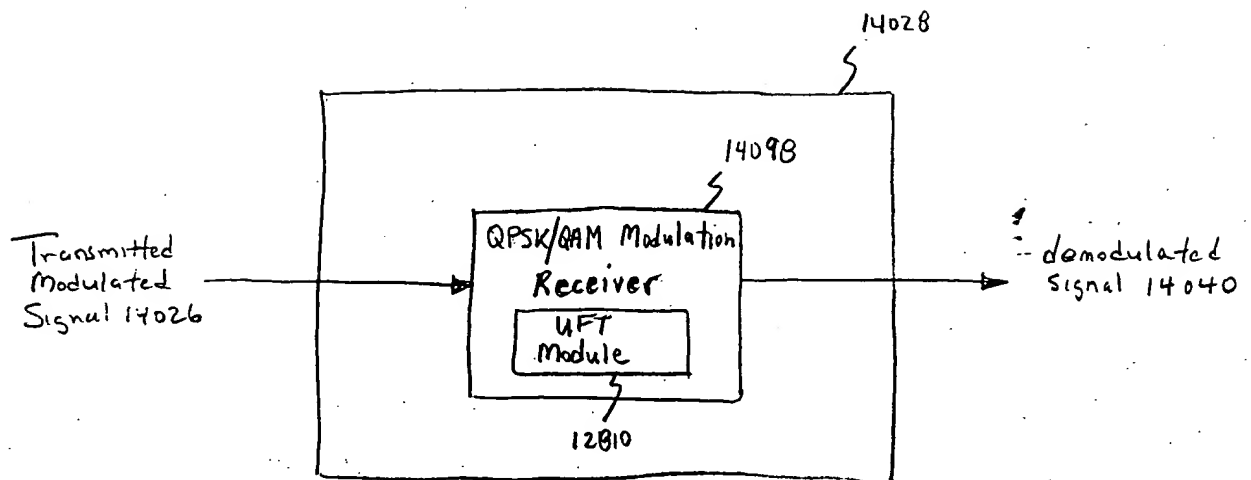


FIG. 140 K

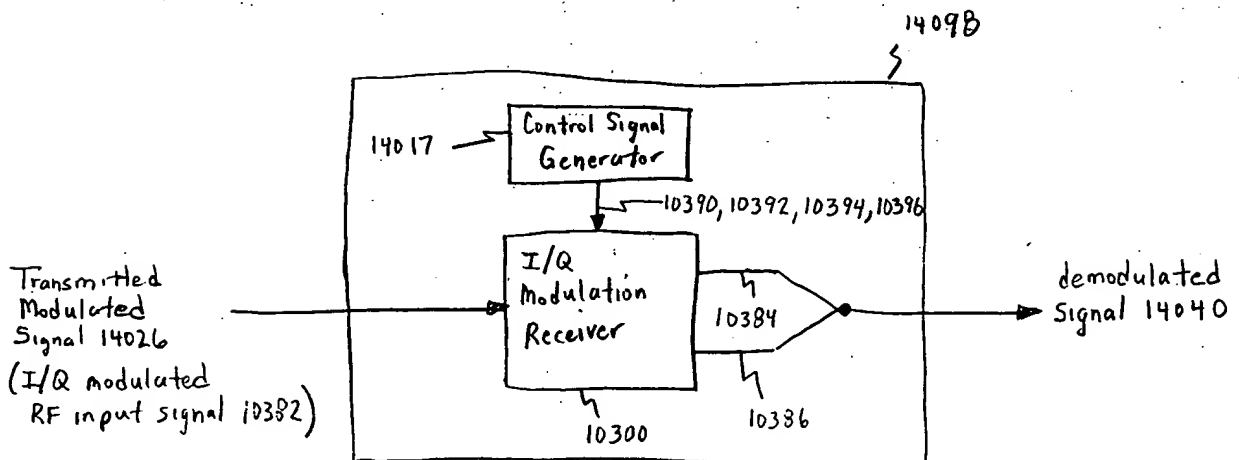


FIG. 140 L

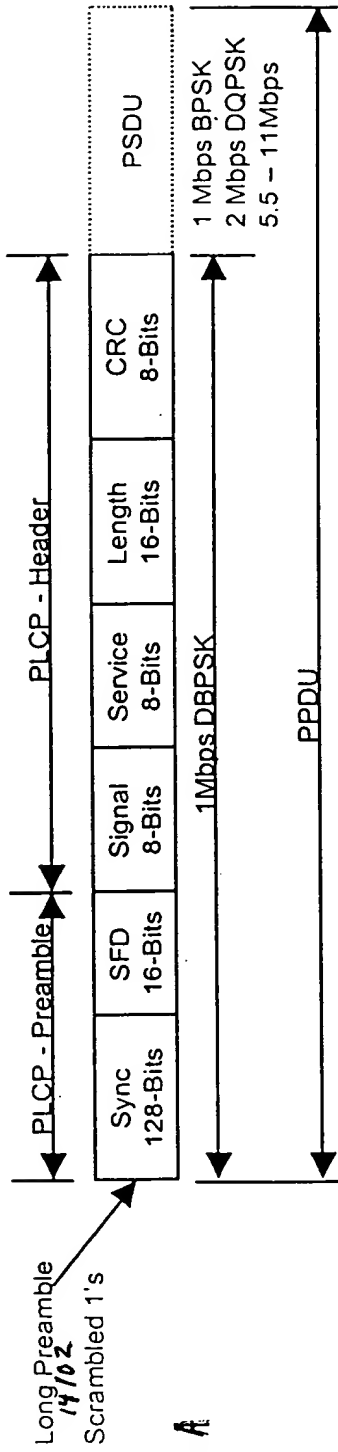


FIG. 141A

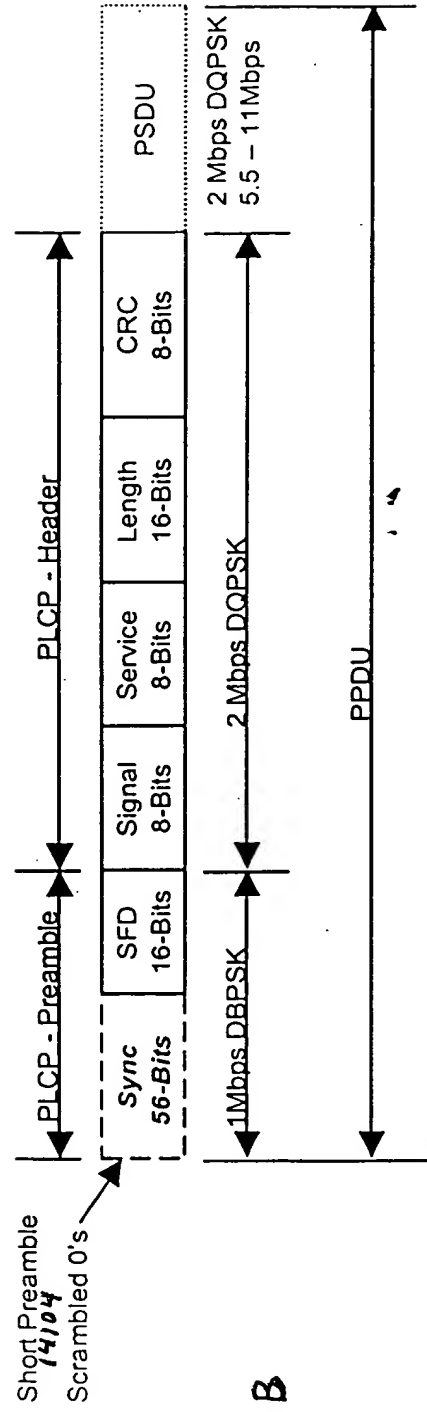


FIG. 141B

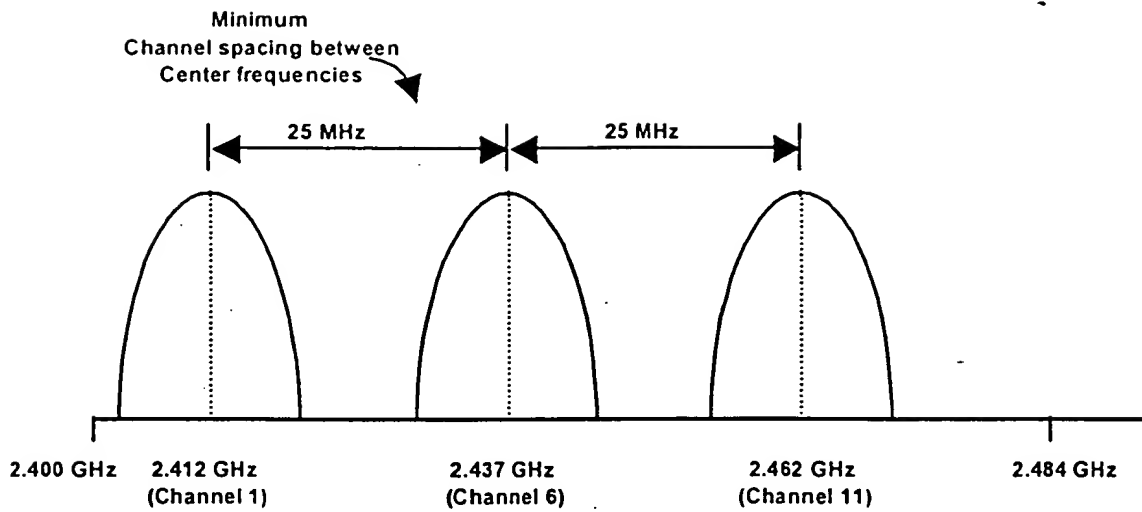


FIG. 142

034000 000000

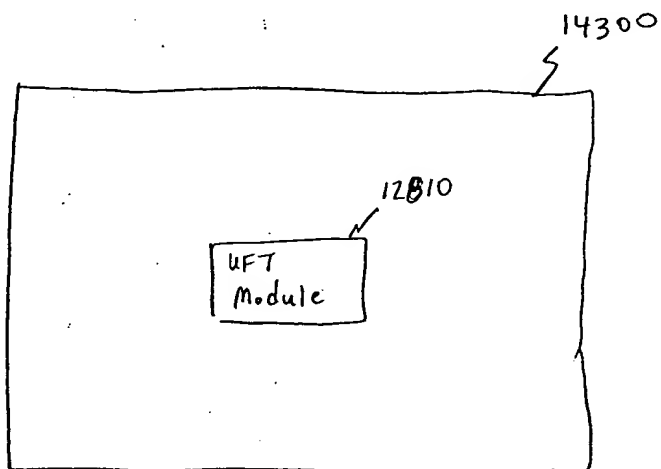


FIG. 143 A

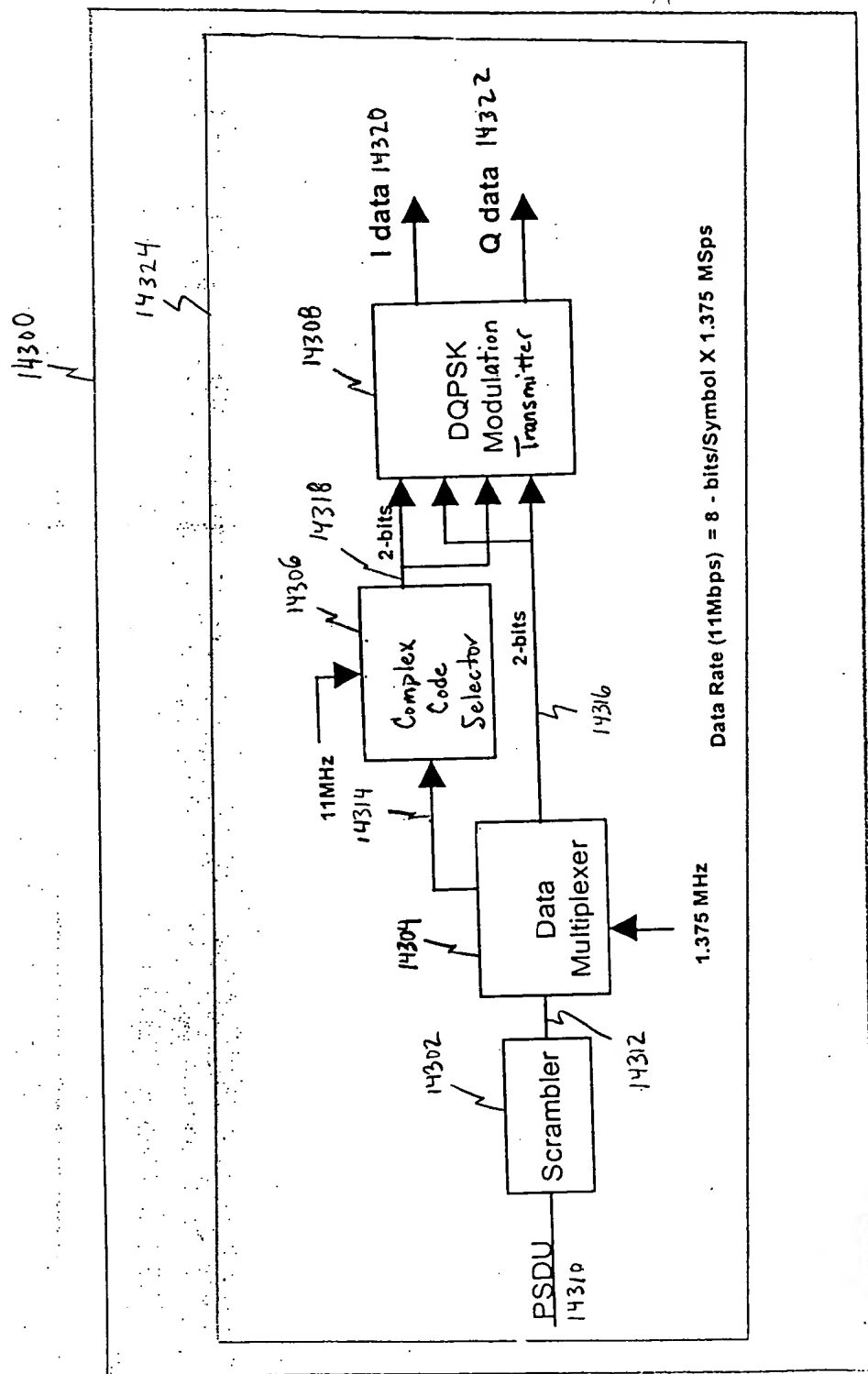


FIG. 143B

004030 1592650

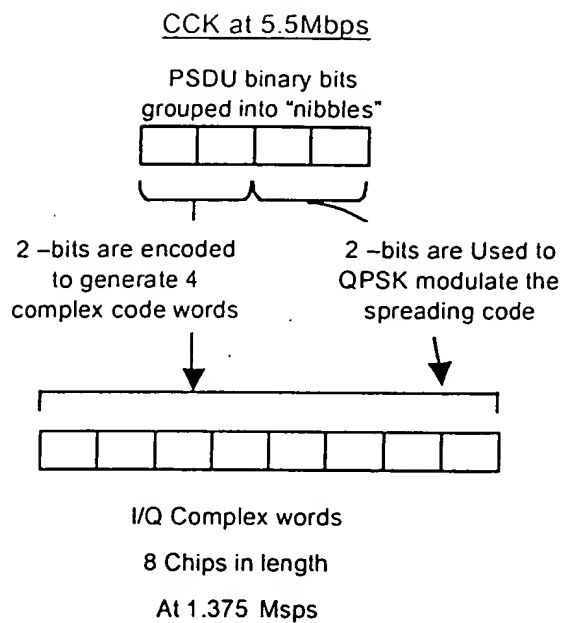


FIG. 144A

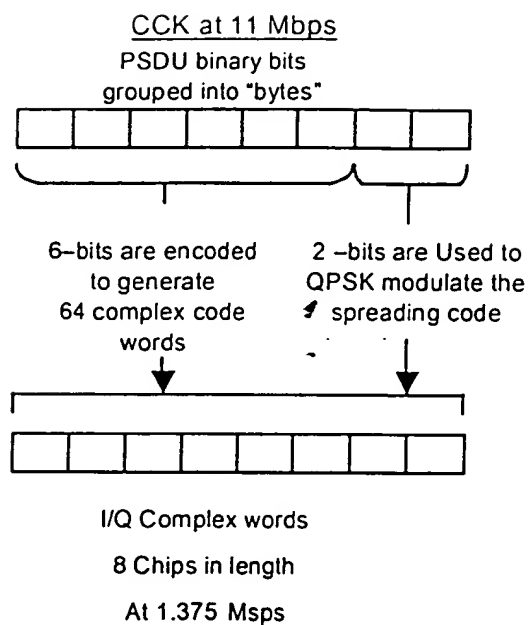


FIG. 144B

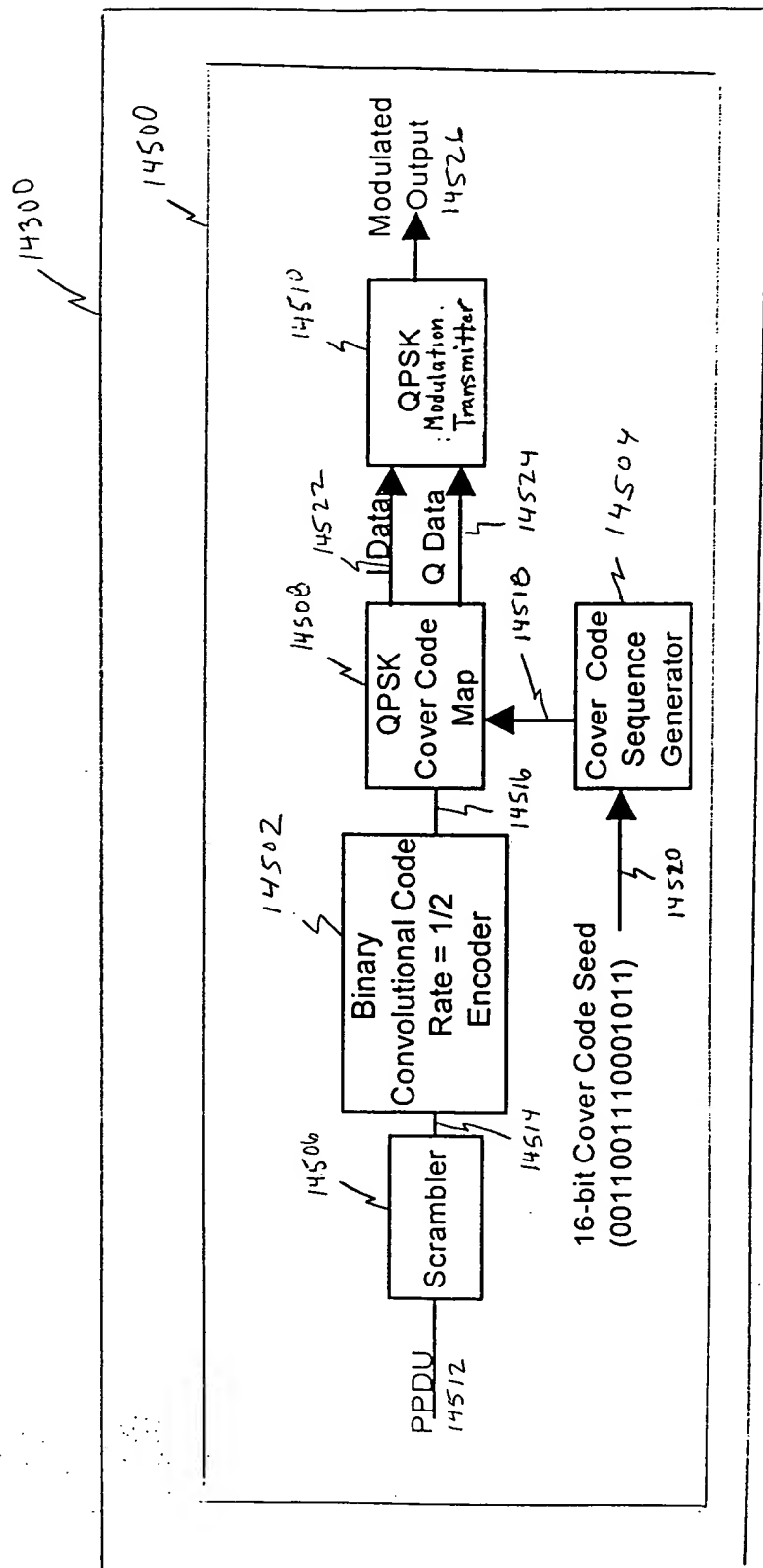


FIG. 145A

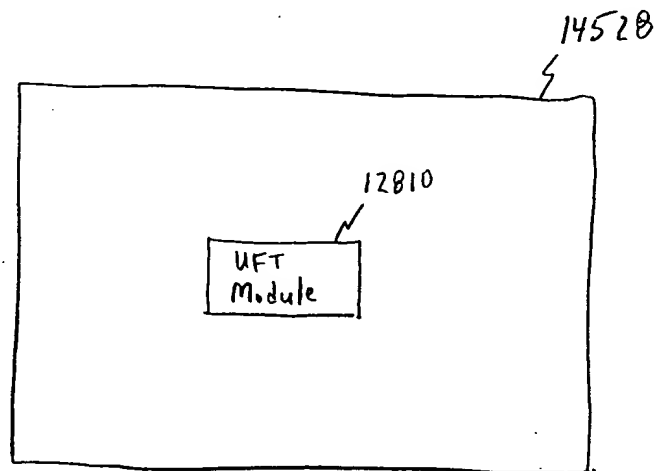


FIG. 145B

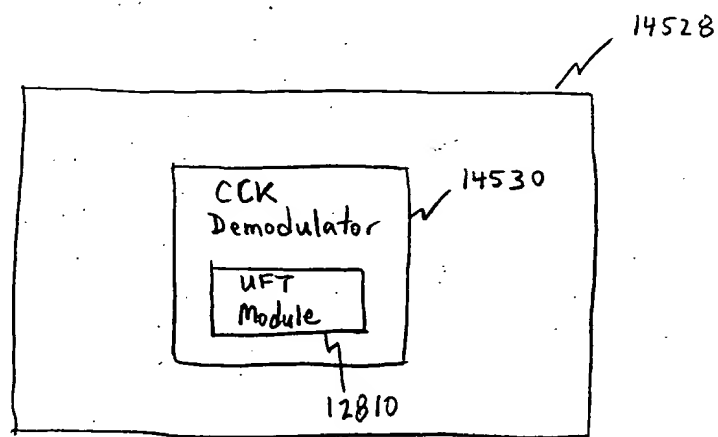


FIG. 145C

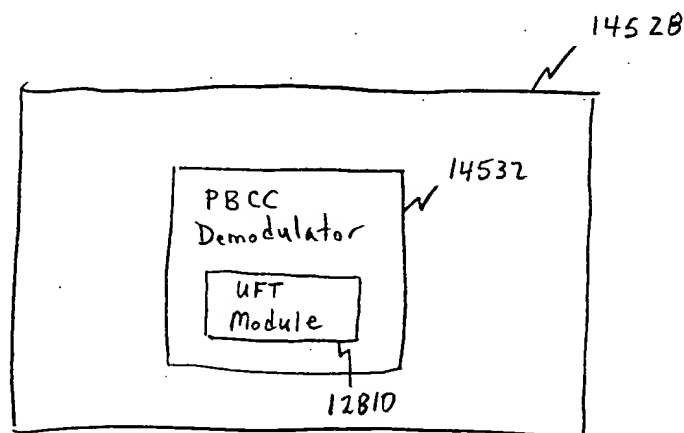


FIG. 145D

FIG. 146

1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2

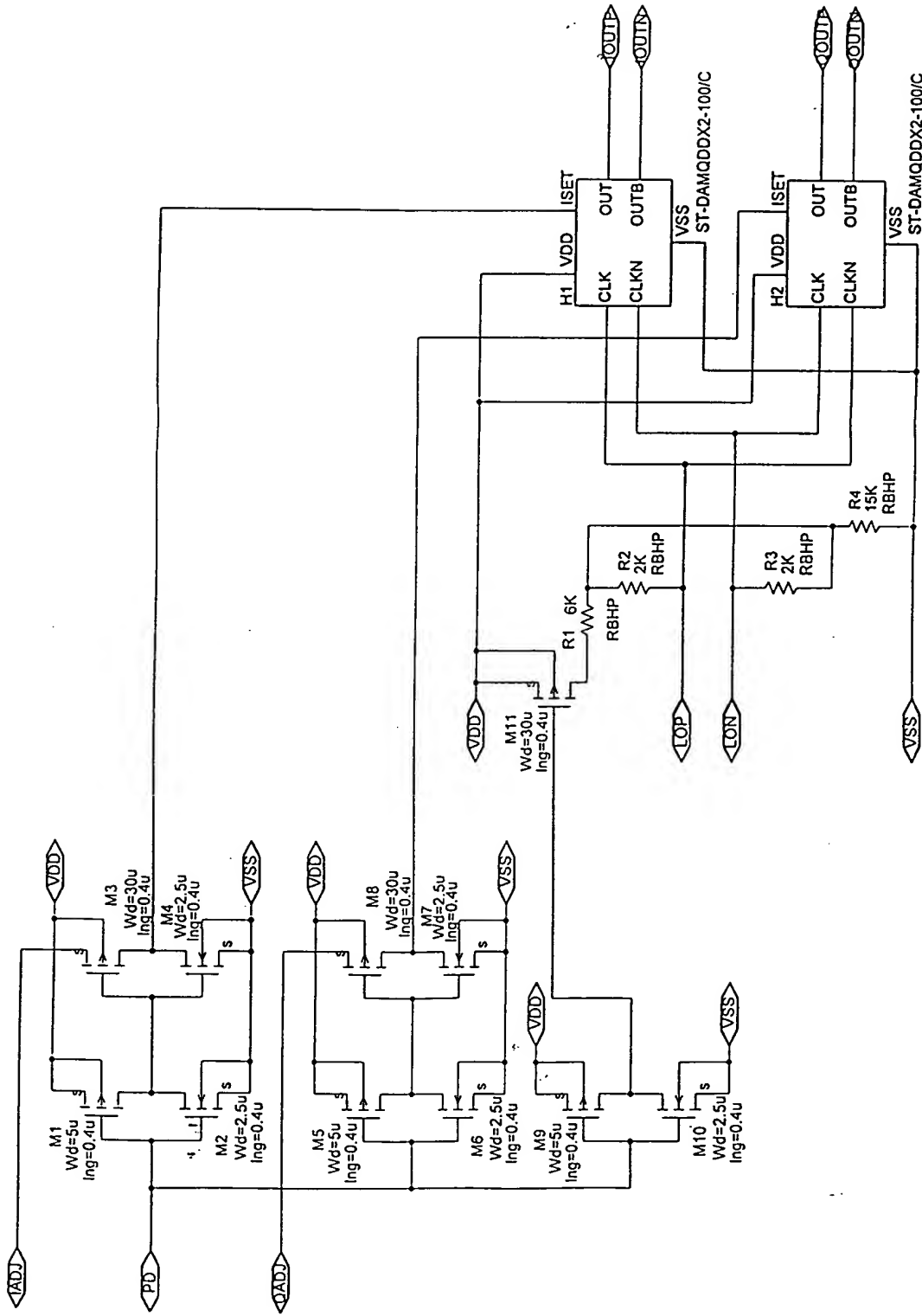


FIG. 147

004030 7 00 00 00 00 00

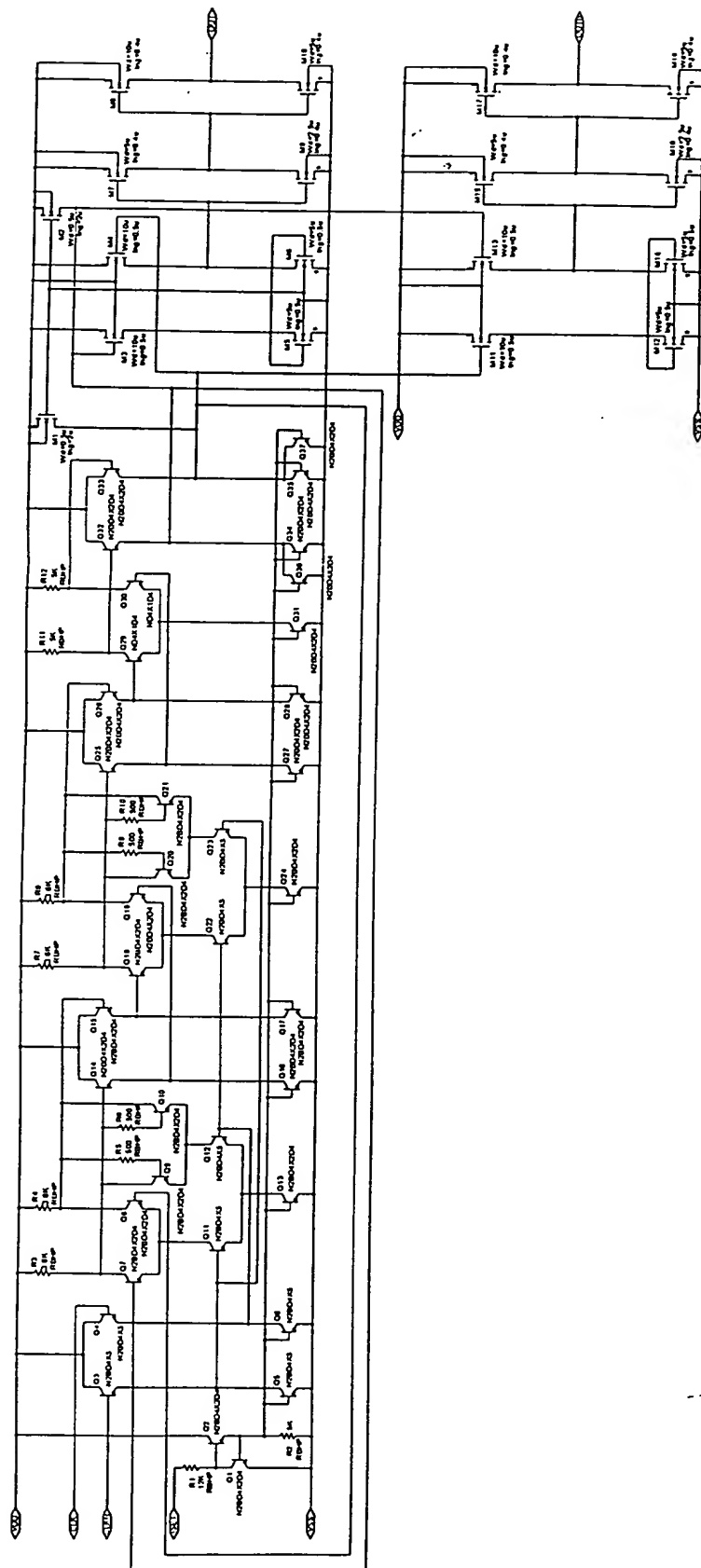


FIG. 148

FIG. 149

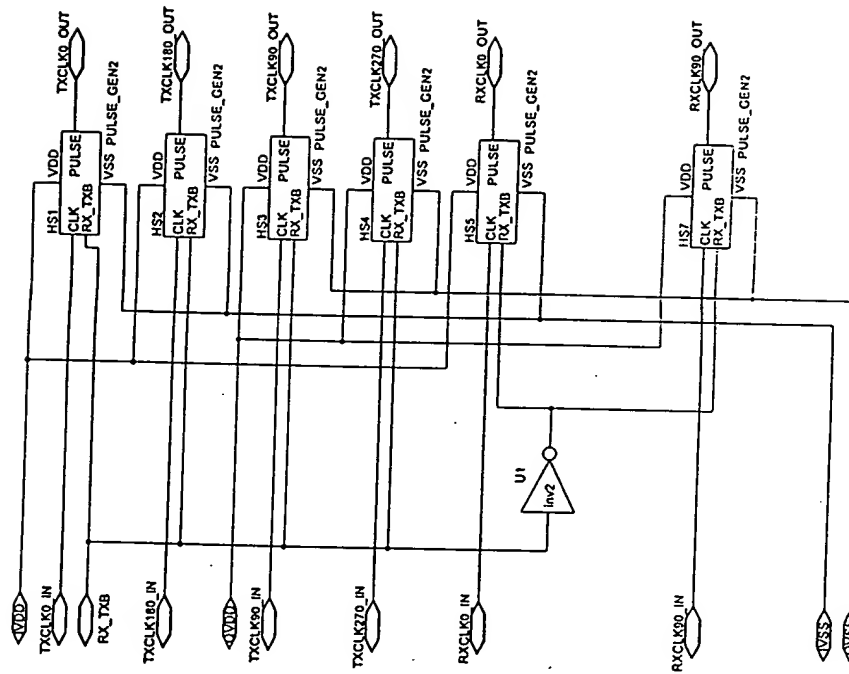


FIG. 149

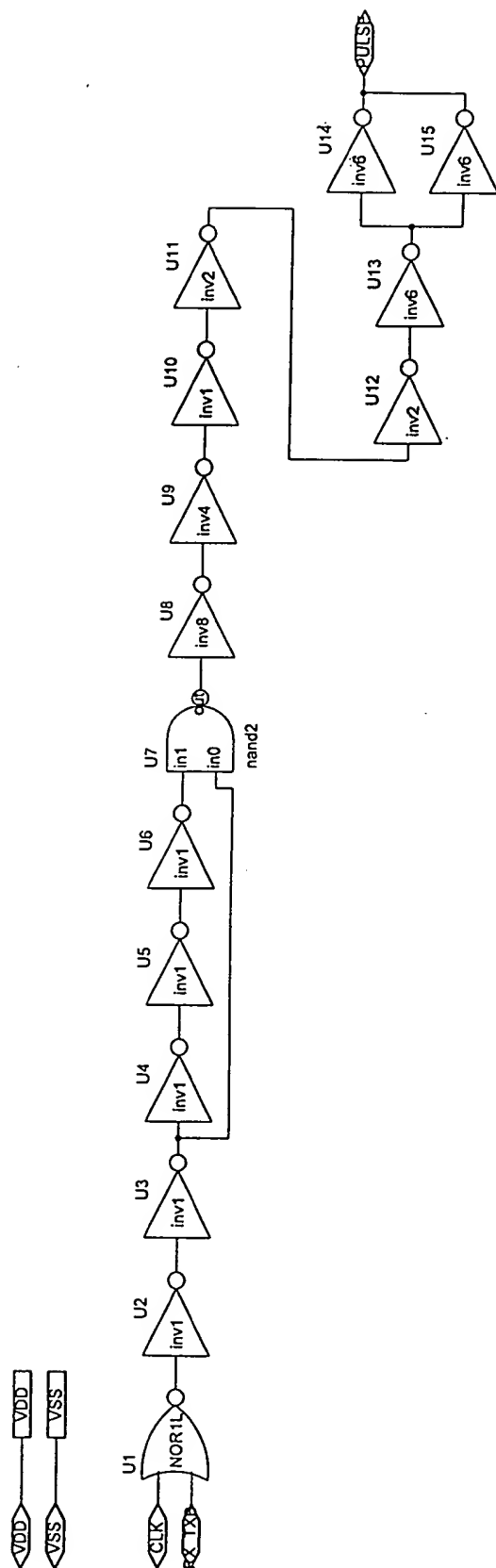


FIG. 150

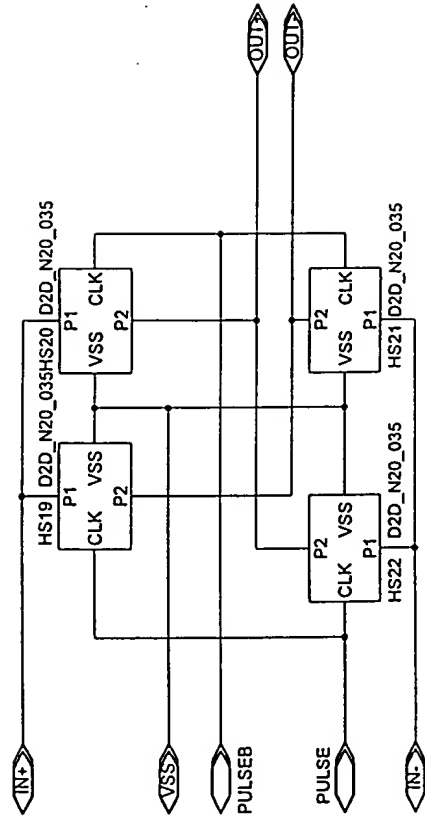


FIG. 152

5



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004020 230600

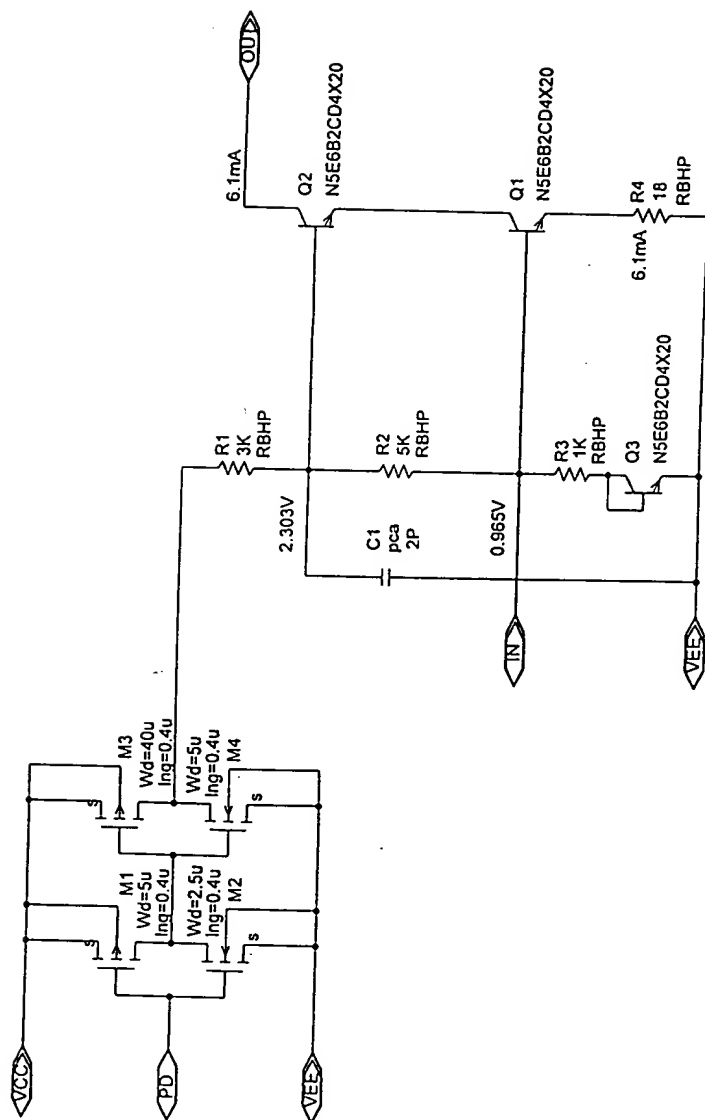


FIG. 154

1

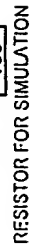


FIG. 155

FIG. 150

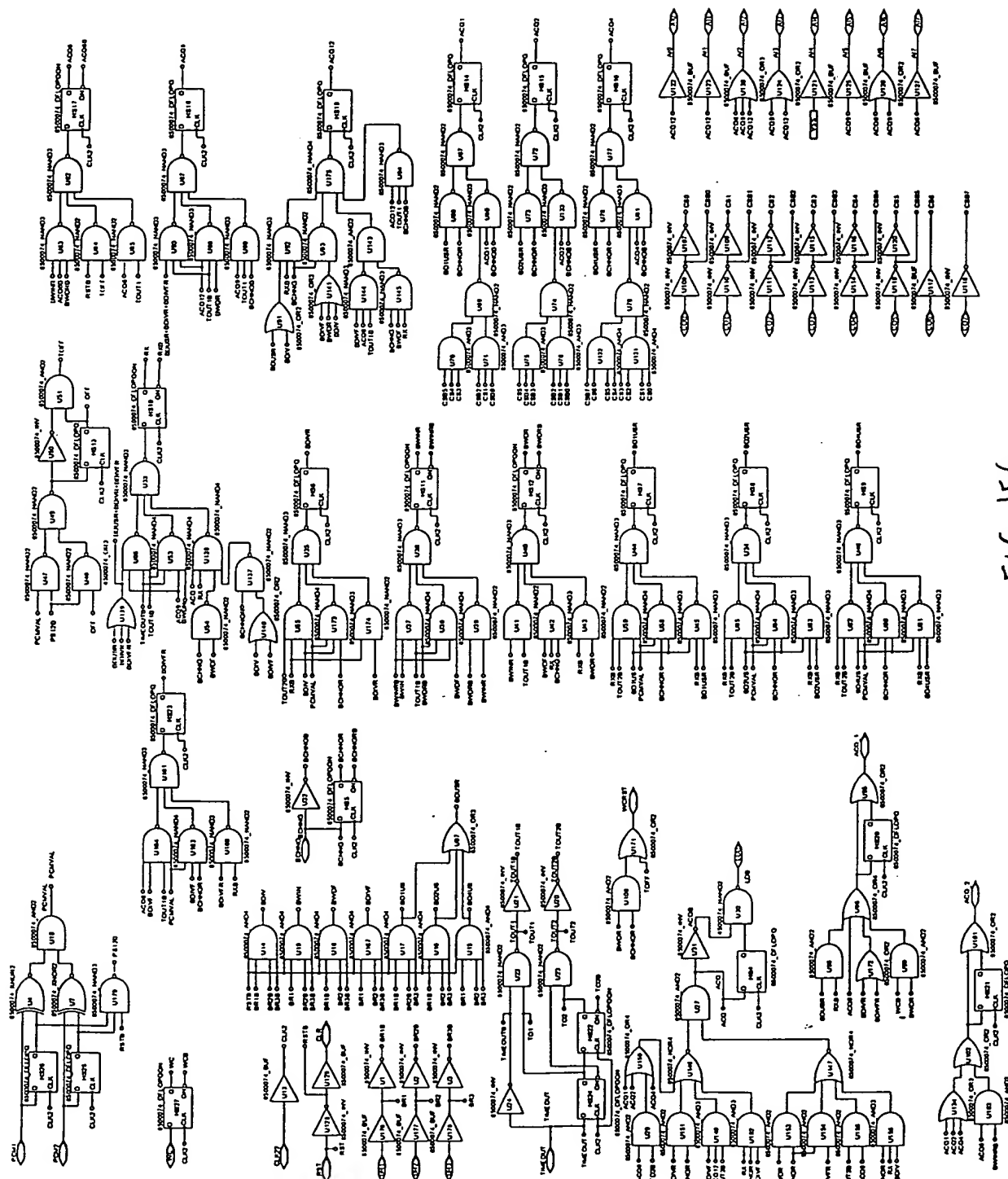


FIG. 150

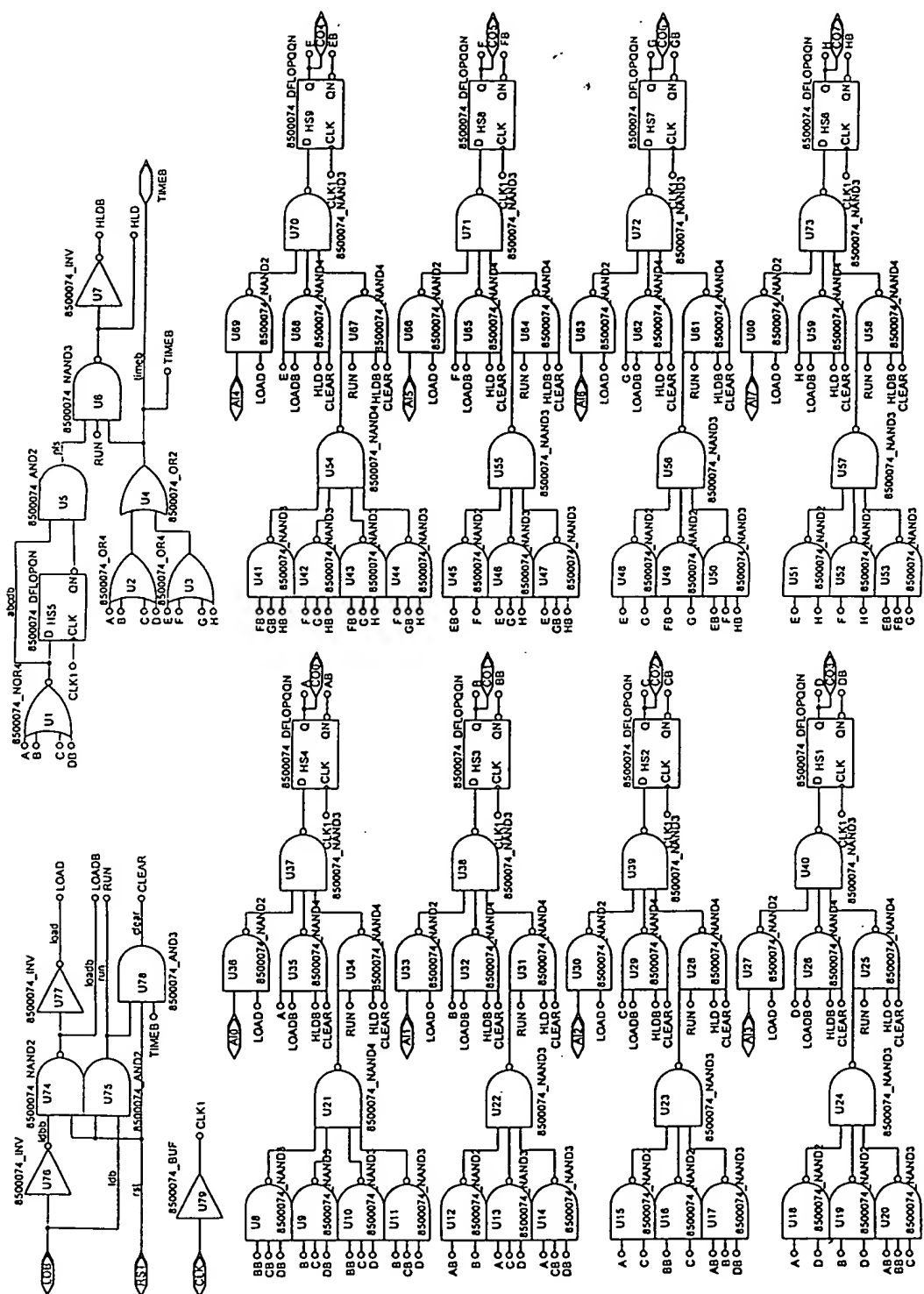


FIG. 158

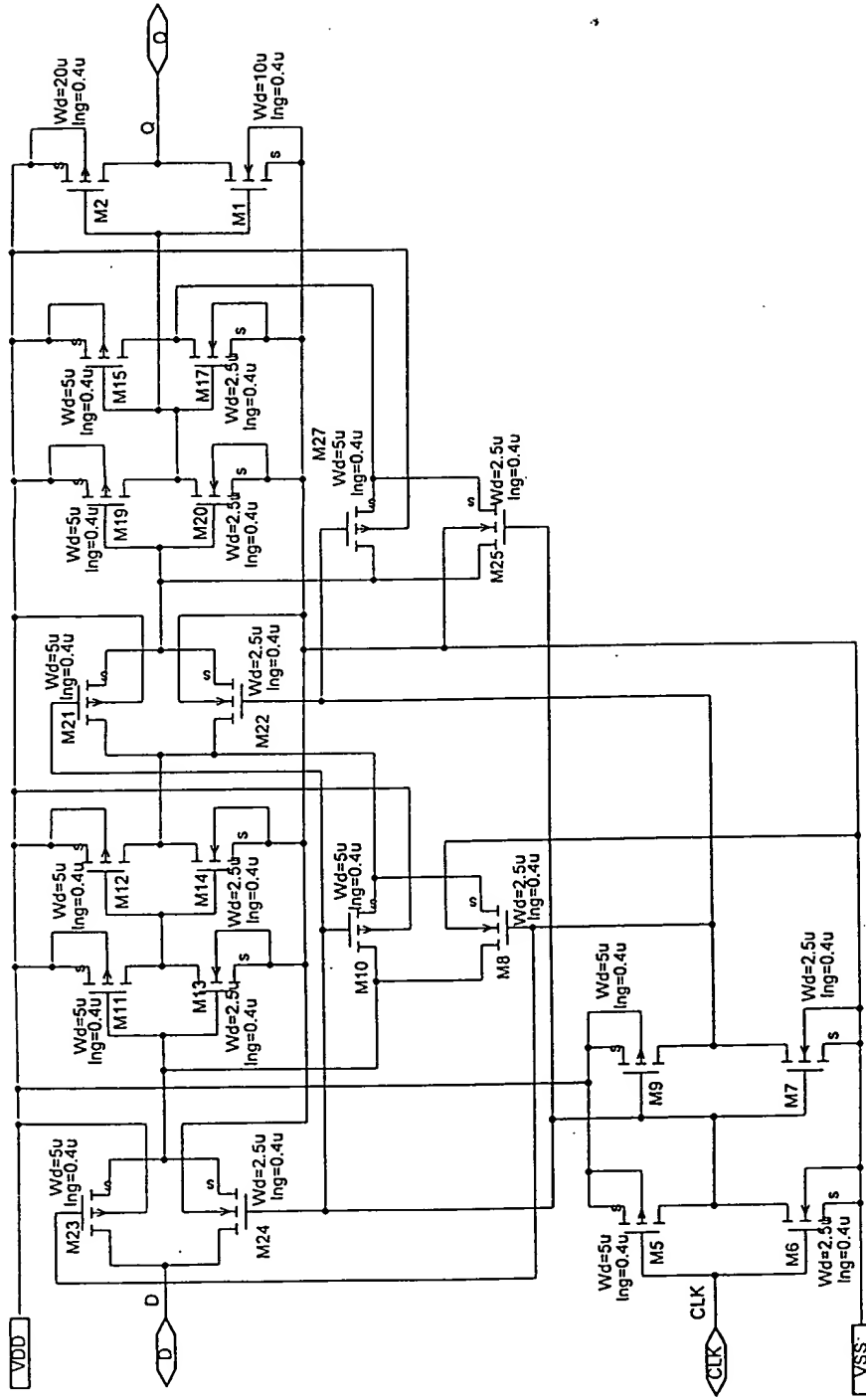


FIG. 158

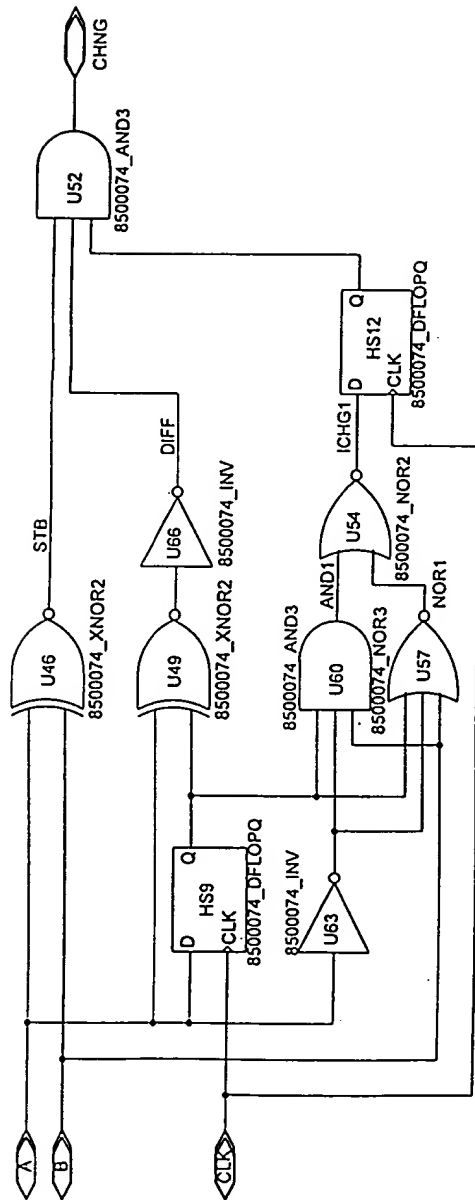


FIG. 159

004030" 66022600

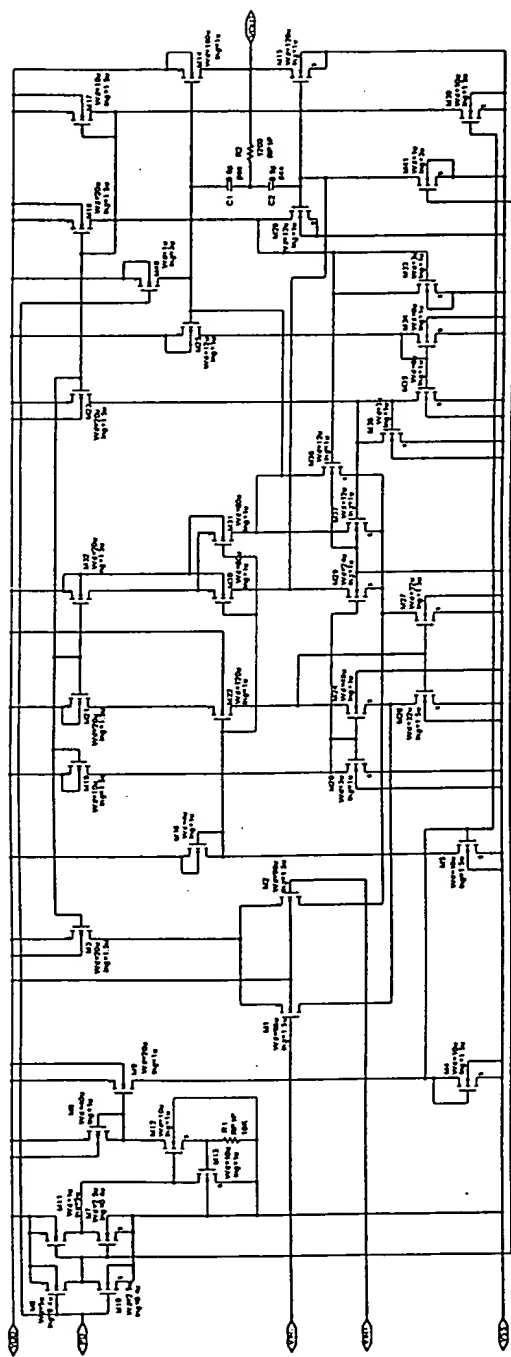


FIG. 160

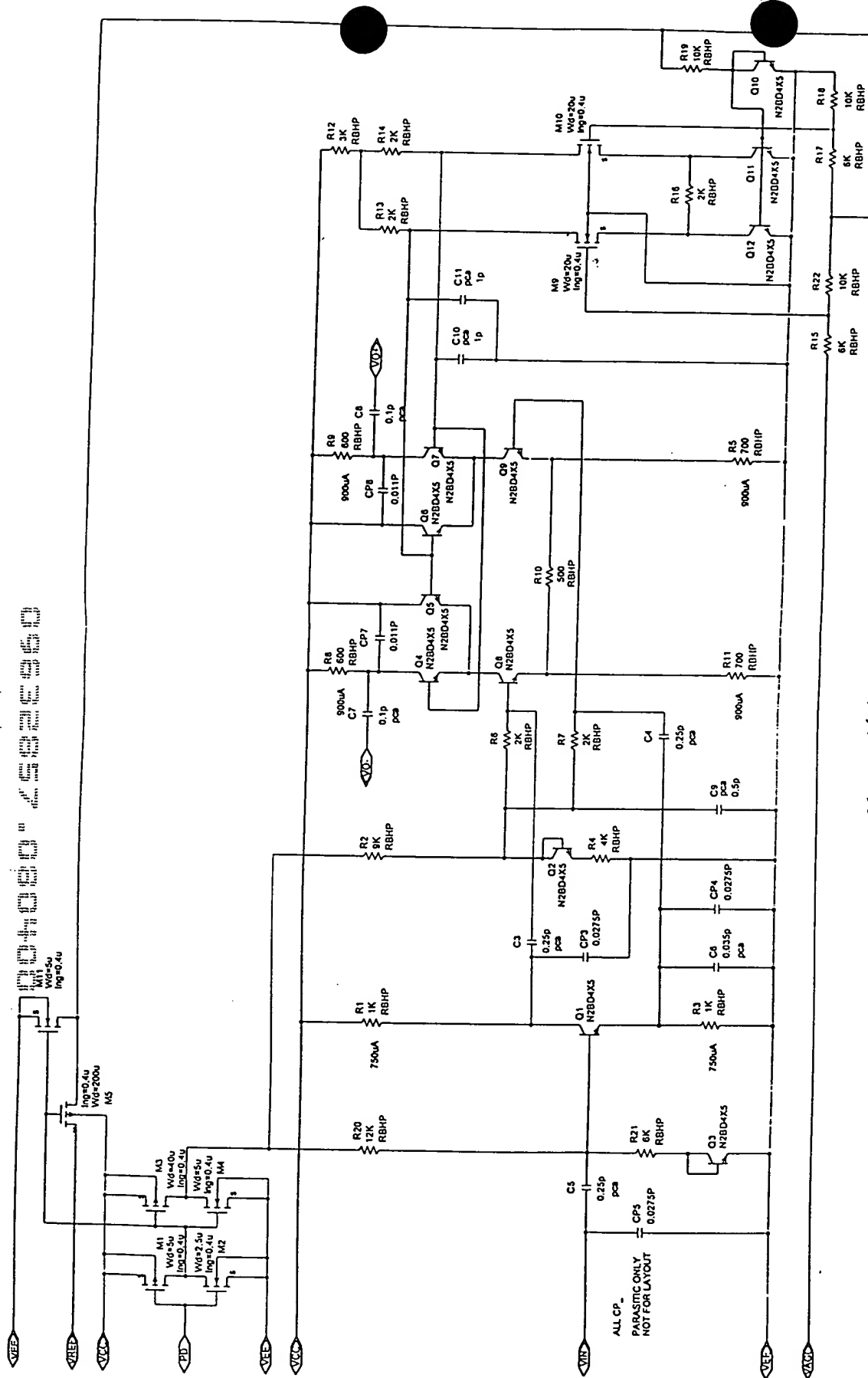


FIG. 161

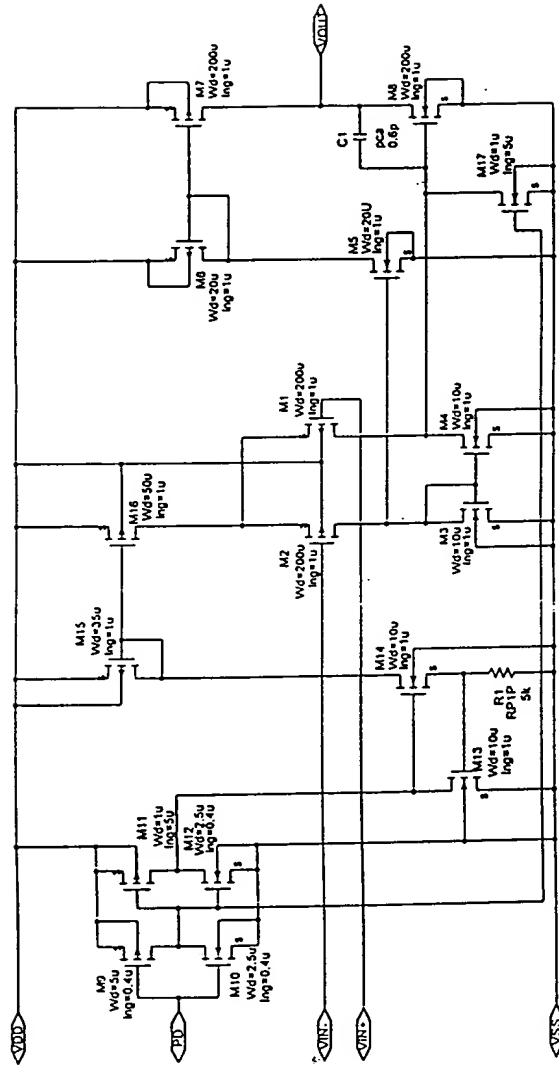


FIG. 162

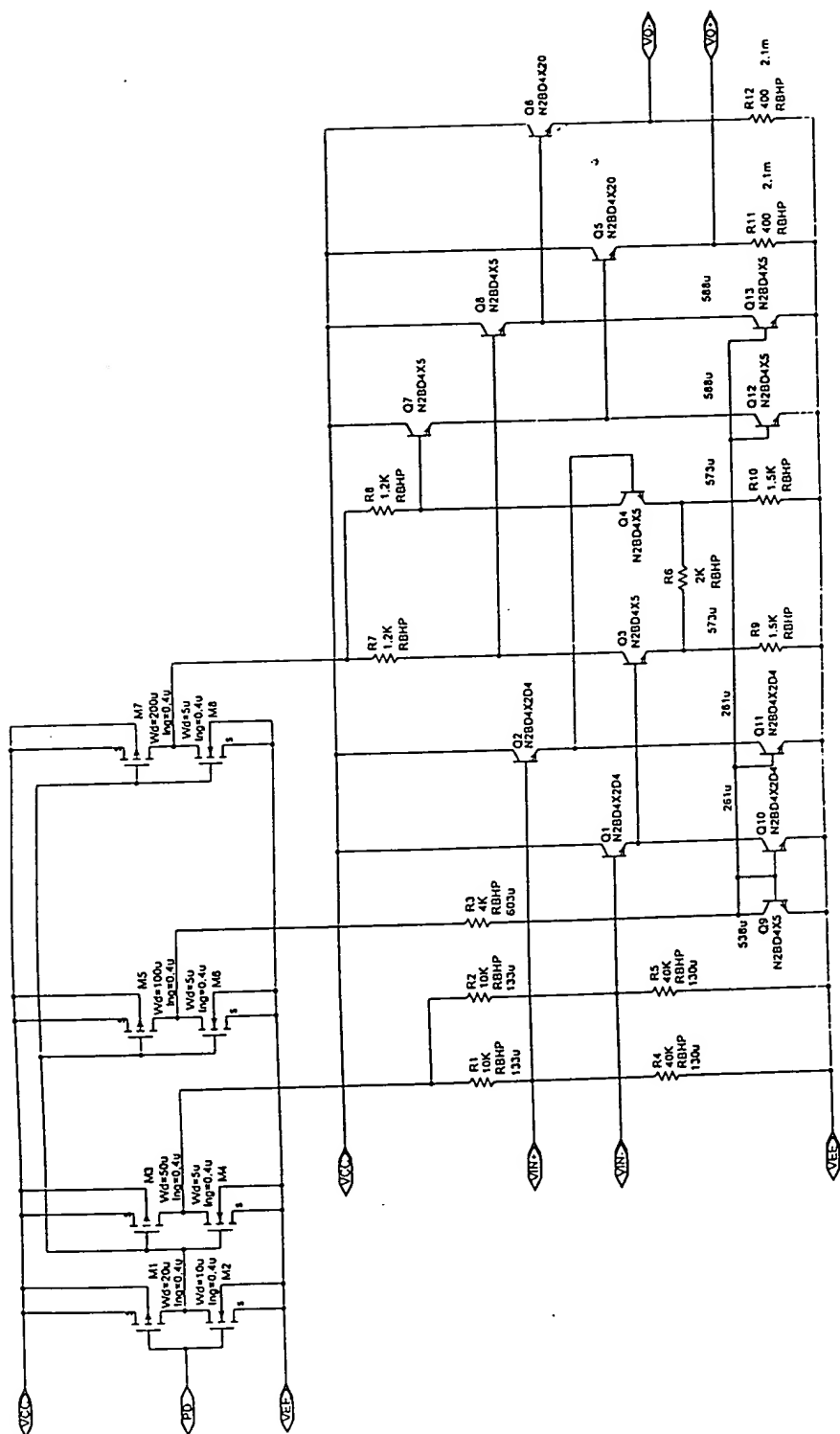


FIG. 163



CMFB

007030 232650

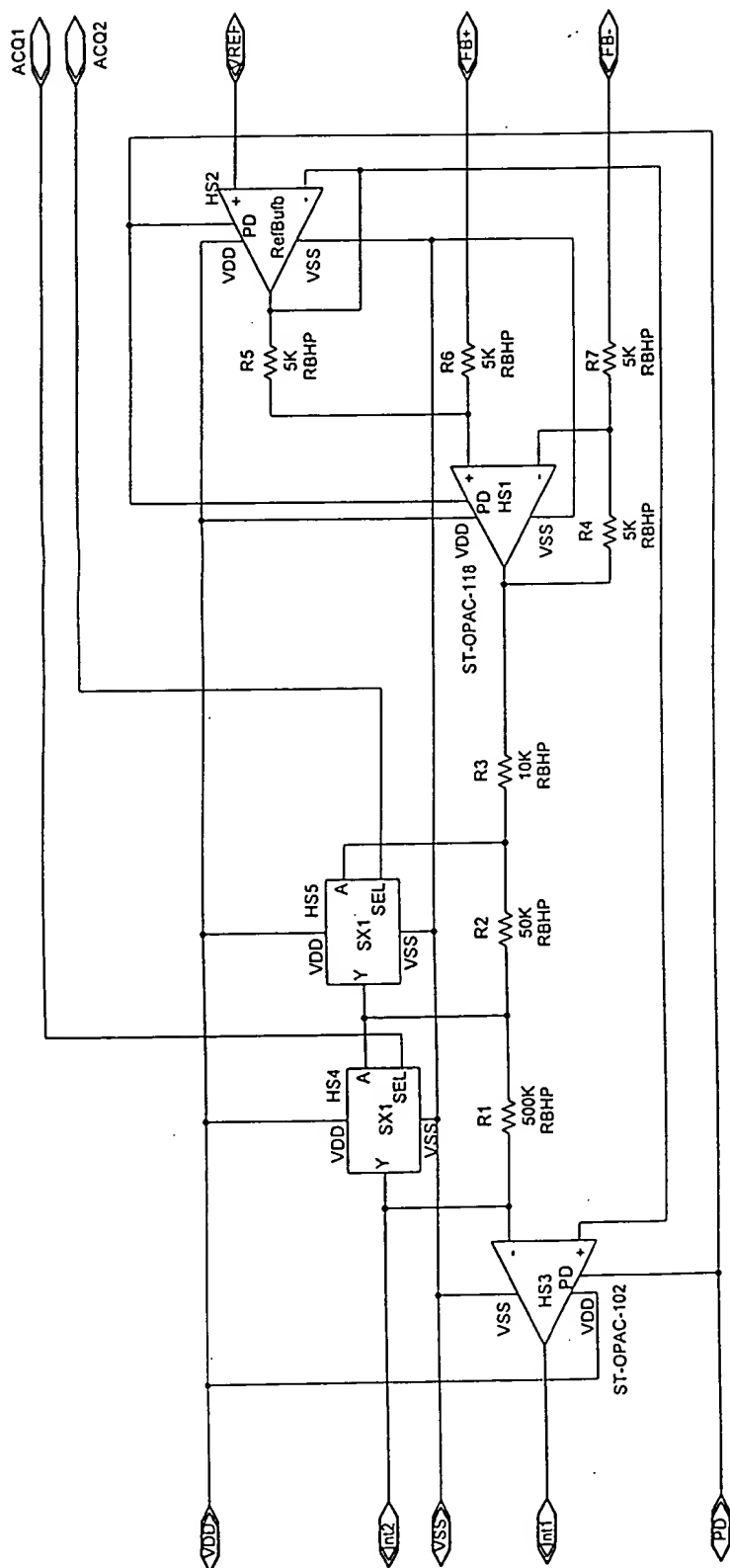


FIG. 165

004030" 453635

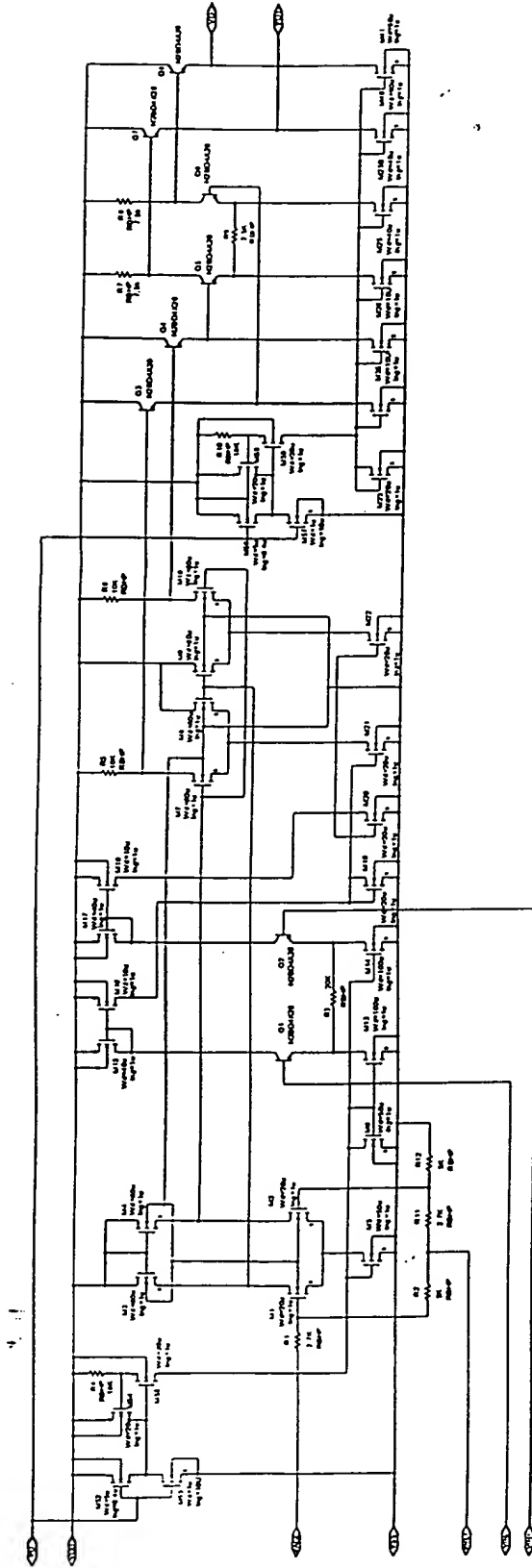


FIG. 166

1. *Phragmites australis* (Cav.) Trin. ex Steud. (Common reed)
 2. *Scirpus atrovirens* (L.) Link. (Black bog rush)
 3. *Scirpus cespitosus* (L.) Link. (Bog rush)
 4. *Scirpus eriopodus* (L.) Link. (Bog rush)
 5. *Scirpus hololepis* (L.) Link. (Bog rush)
 6. *Scirpus maritimus* (L.) Link. (Sea rush)
 7. *Scirpus setaceus* (L.) Link. (Bog rush)
 8. *Scirpus tabernaemontani* (L.) Link. (Bog rush)
 9. *Scirpus torreyana* (L.) Link. (Bog rush)
 10. *Scirpus torreyana* (L.) Link. (Bog rush)
 11. *Scirpus torreyana* (L.) Link. (Bog rush)
 12. *Scirpus torreyana* (L.) Link. (Bog rush)
 13. *Scirpus torreyana* (L.) Link. (Bog rush)
 14. *Scirpus torreyana* (L.) Link. (Bog rush)
 15. *Scirpus torreyana* (L.) Link. (Bog rush)
 16. *Scirpus torreyana* (L.) Link. (Bog rush)
 17. *Scirpus torreyana* (L.) Link. (Bog rush)
 18. *Scirpus torreyana* (L.) Link. (Bog rush)
 19. *Scirpus torreyana* (L.) Link. (Bog rush)
 20. *Scirpus torreyana* (L.) Link. (Bog rush)

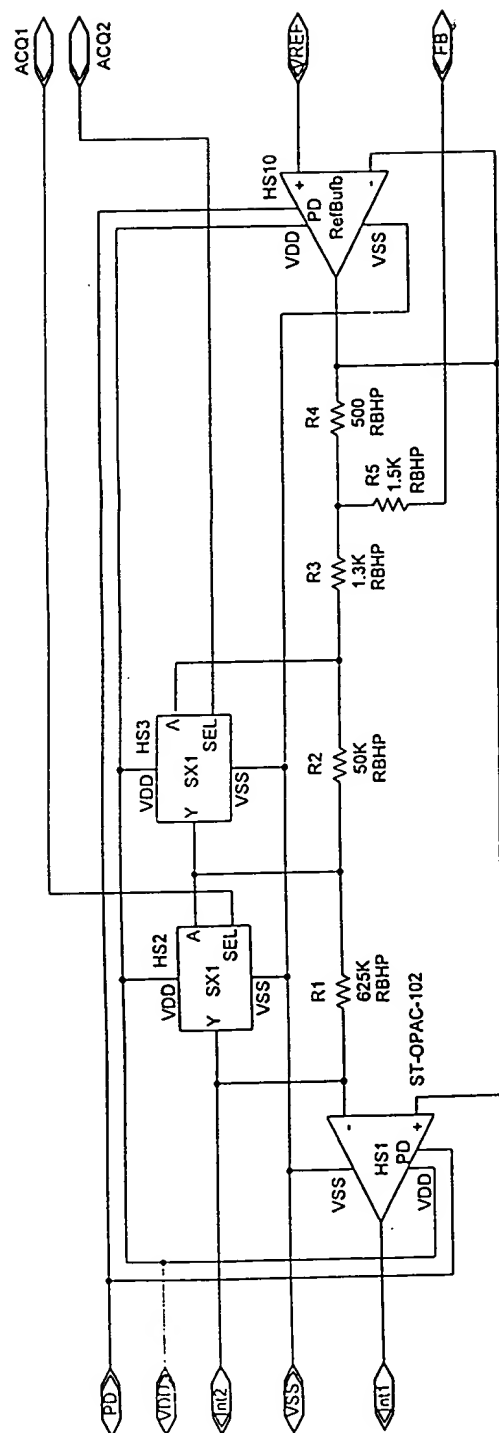


FIG. 167

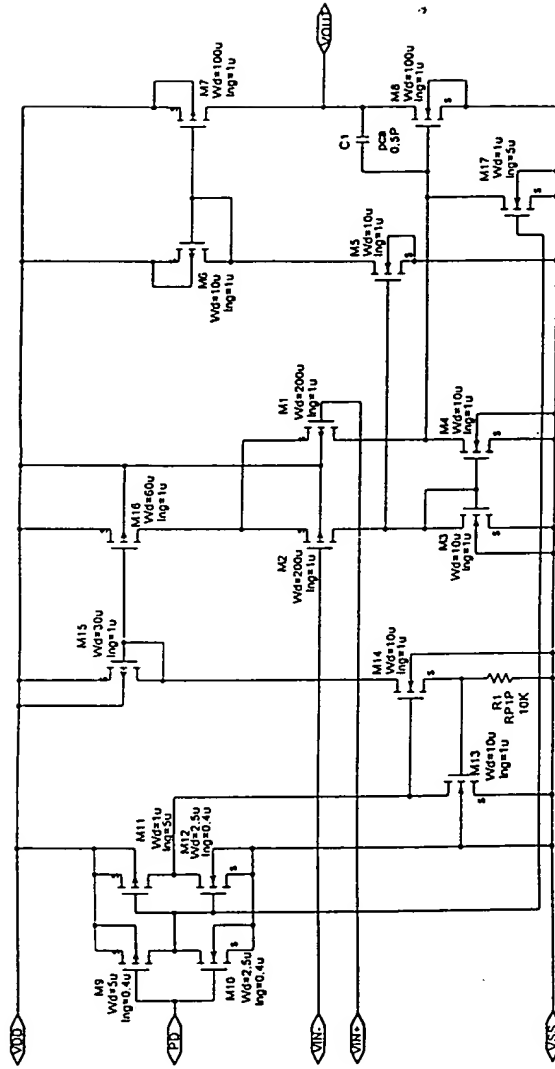


Fig. 168

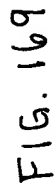


FIG. 169

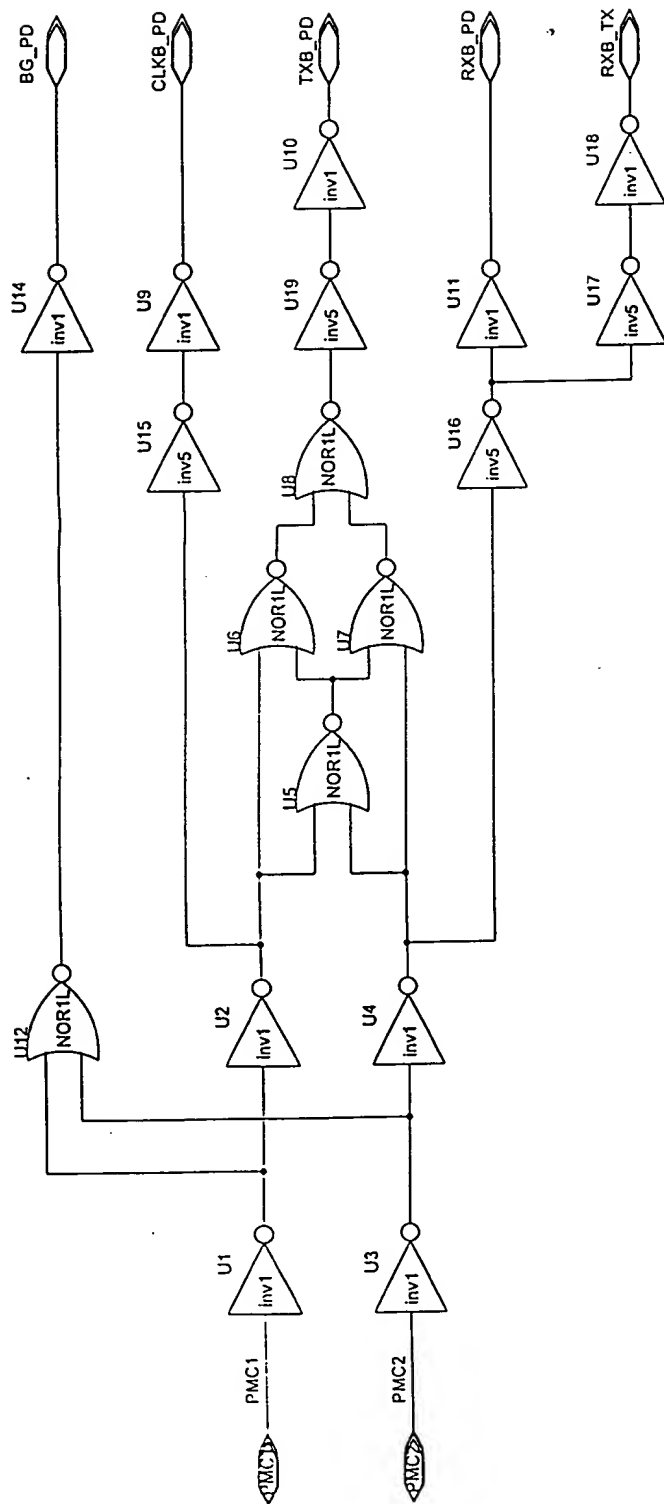


FIG. 171

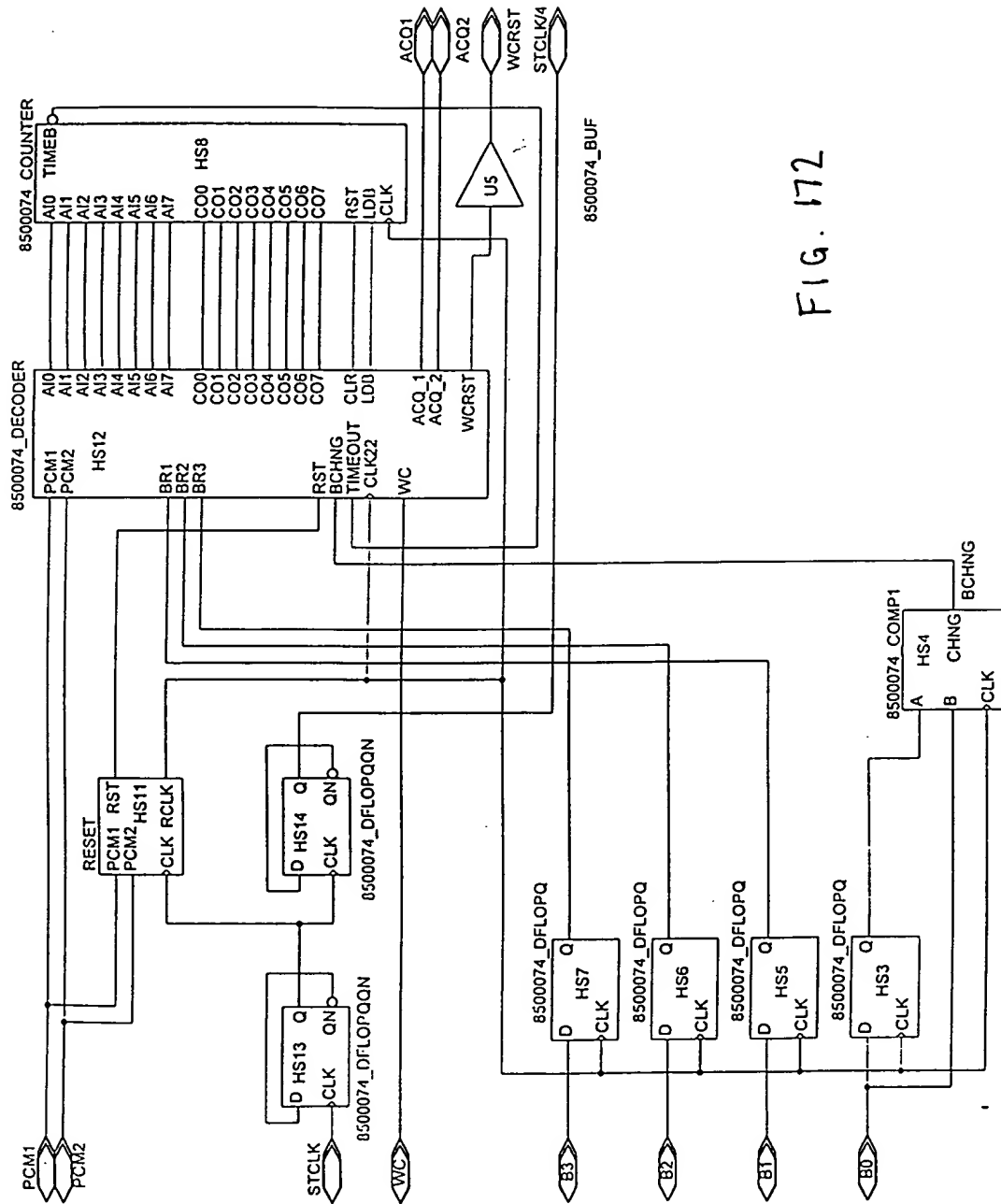


FIG. 172

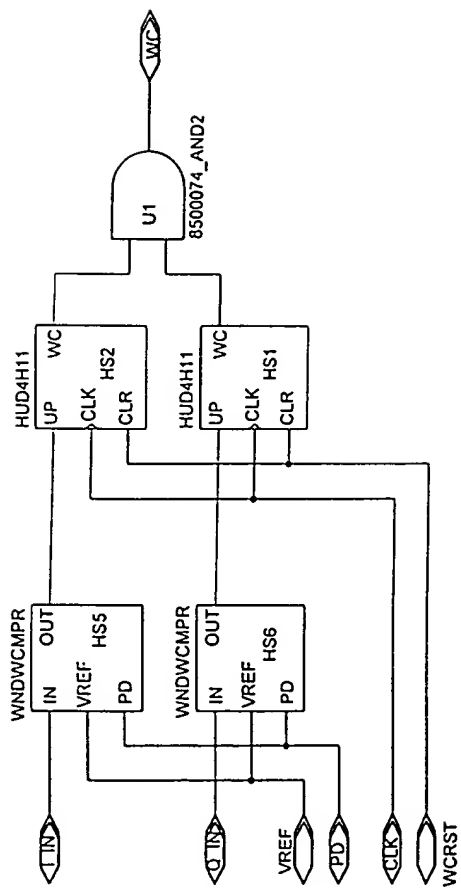


FIG. 173

0044803 2628260

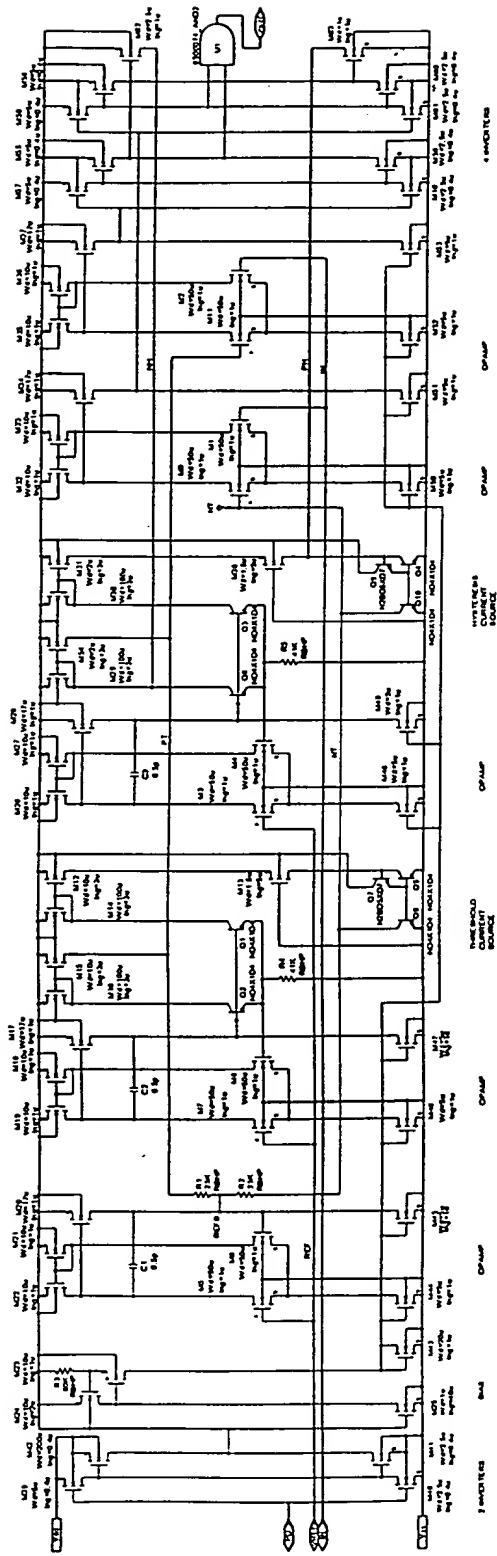


FIG. 174

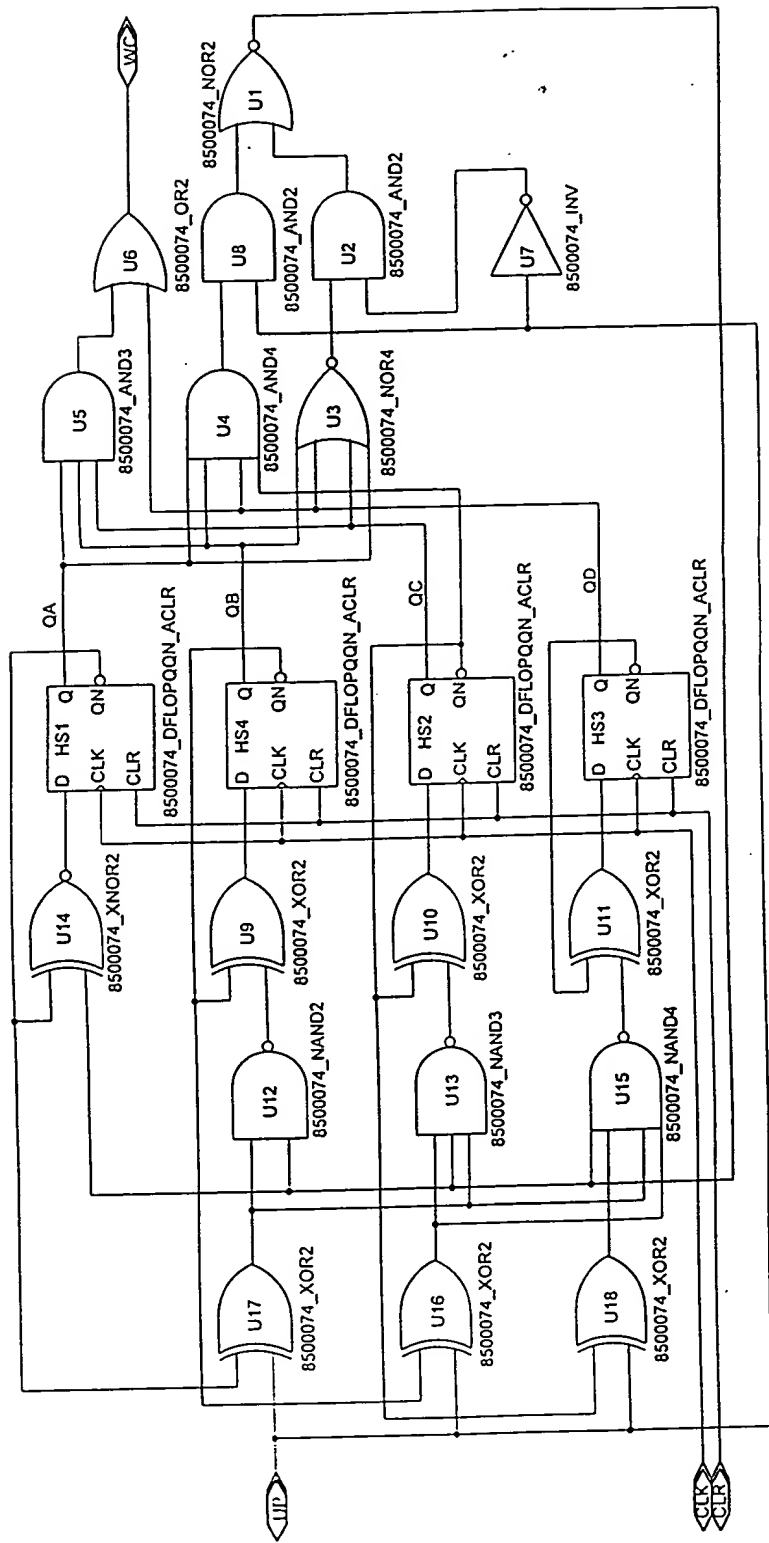


FIG. 175

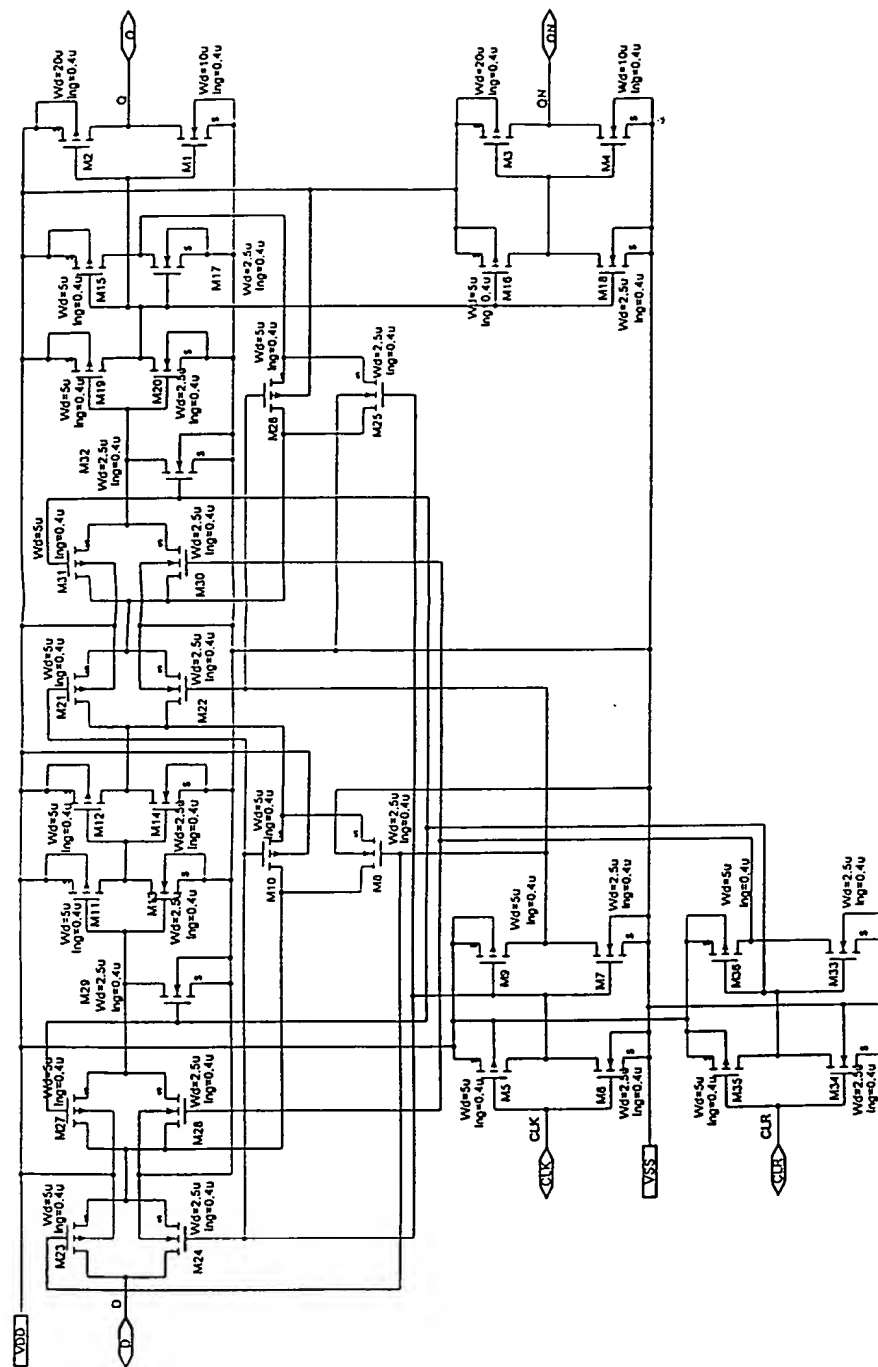


FIG. 176

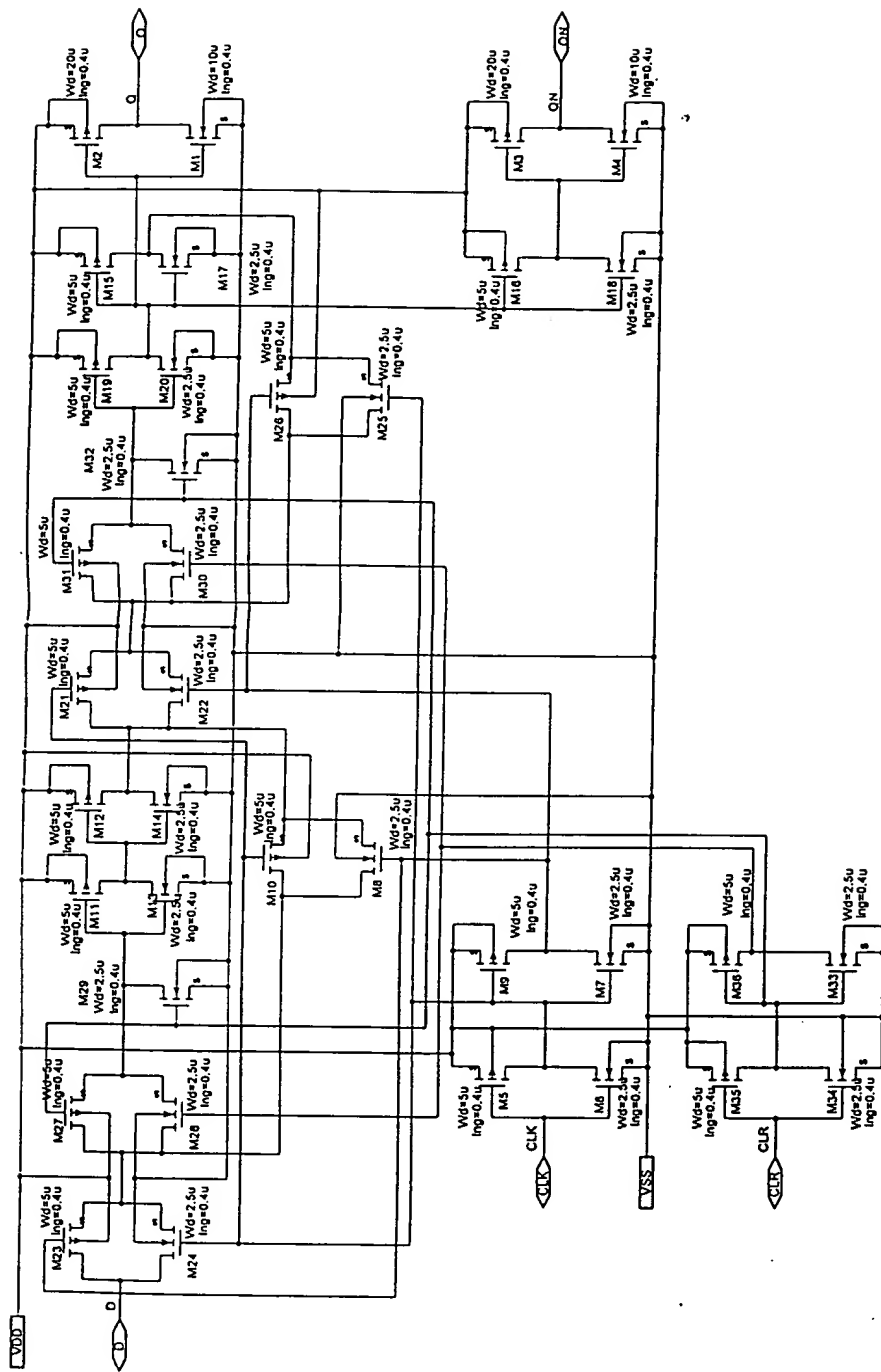


FIG. 177

004000 232250

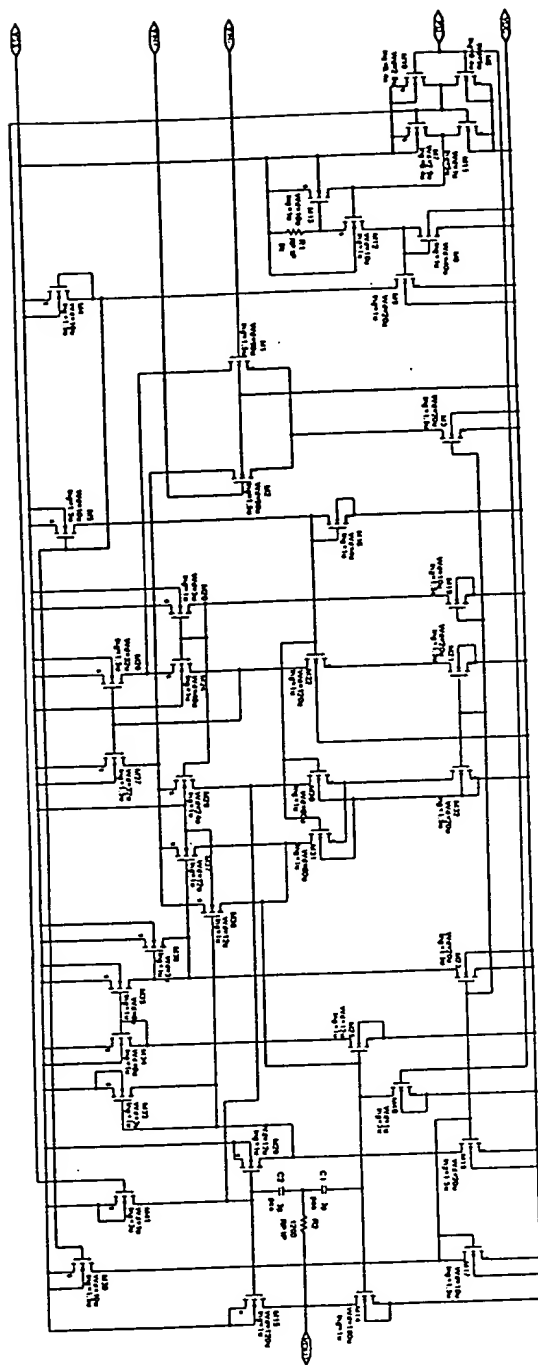


FIG. 178

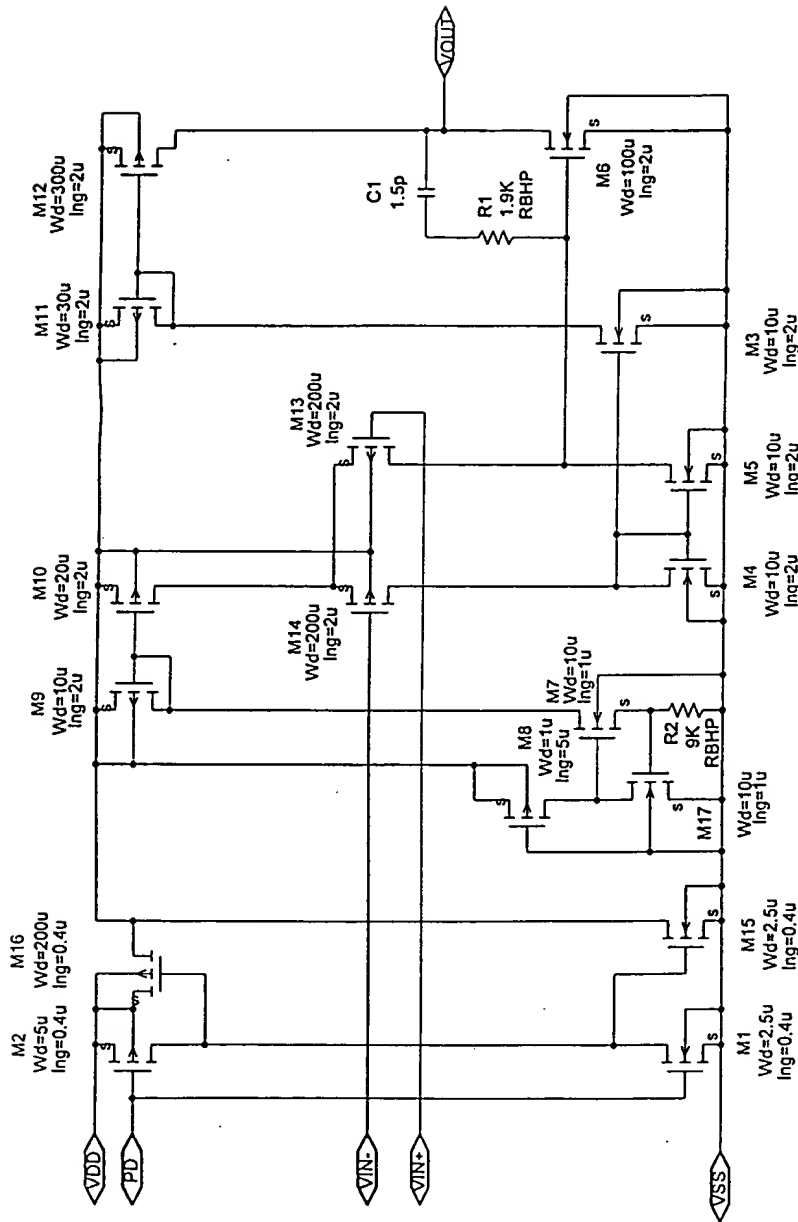
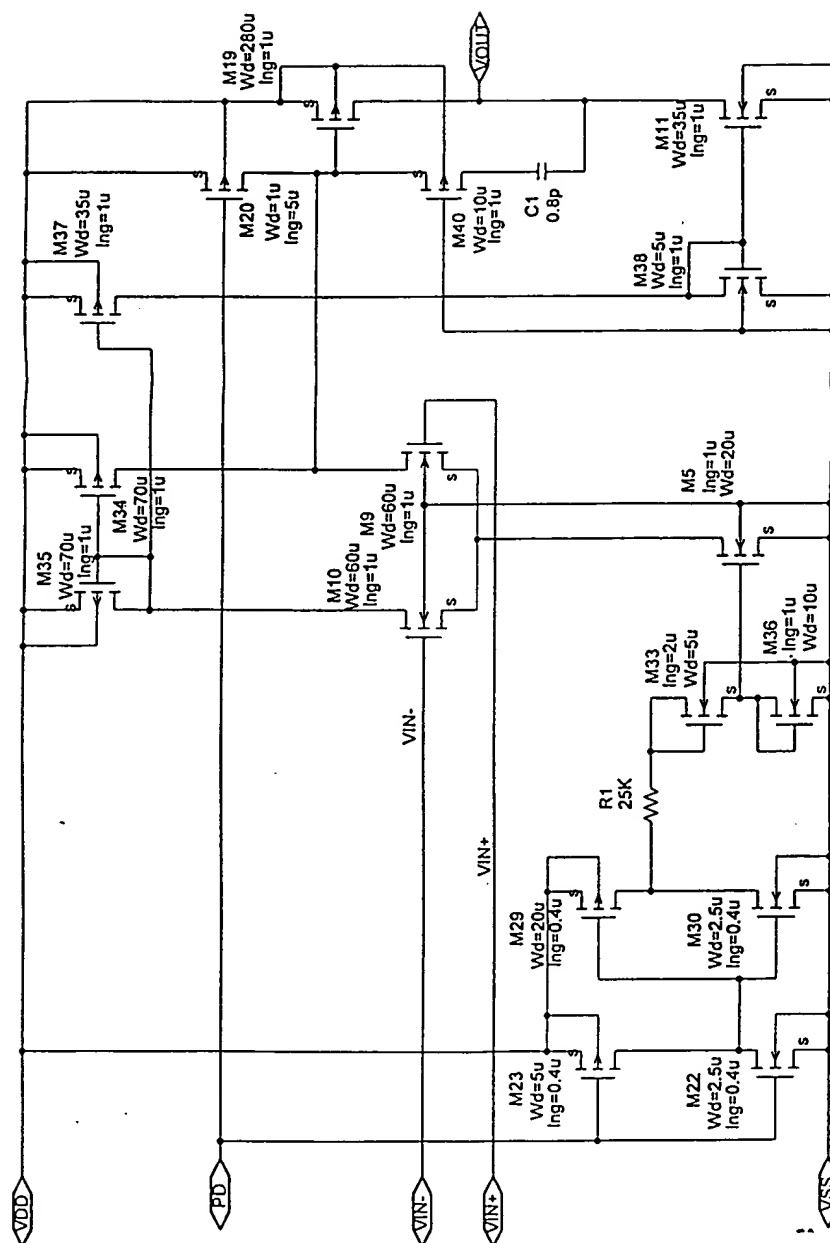
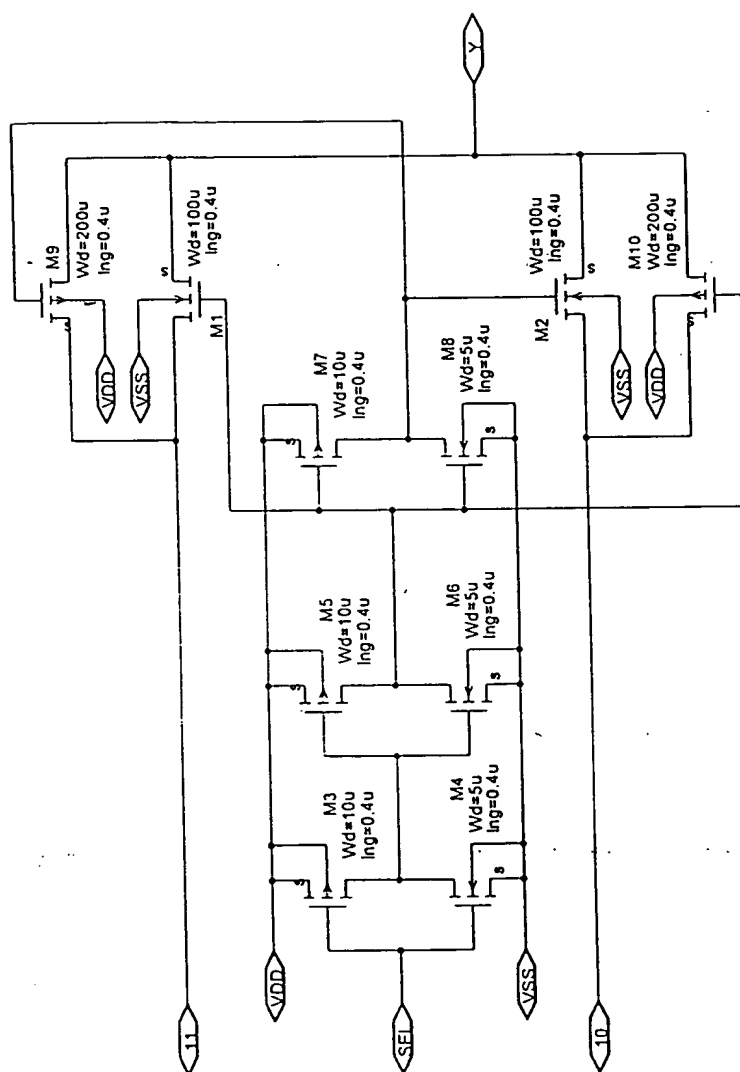


FIG. 179





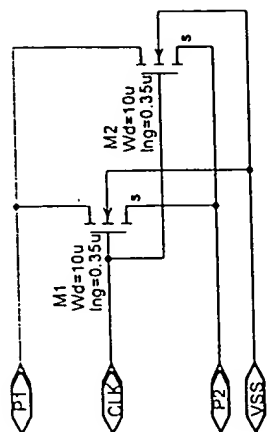


FIG. 182

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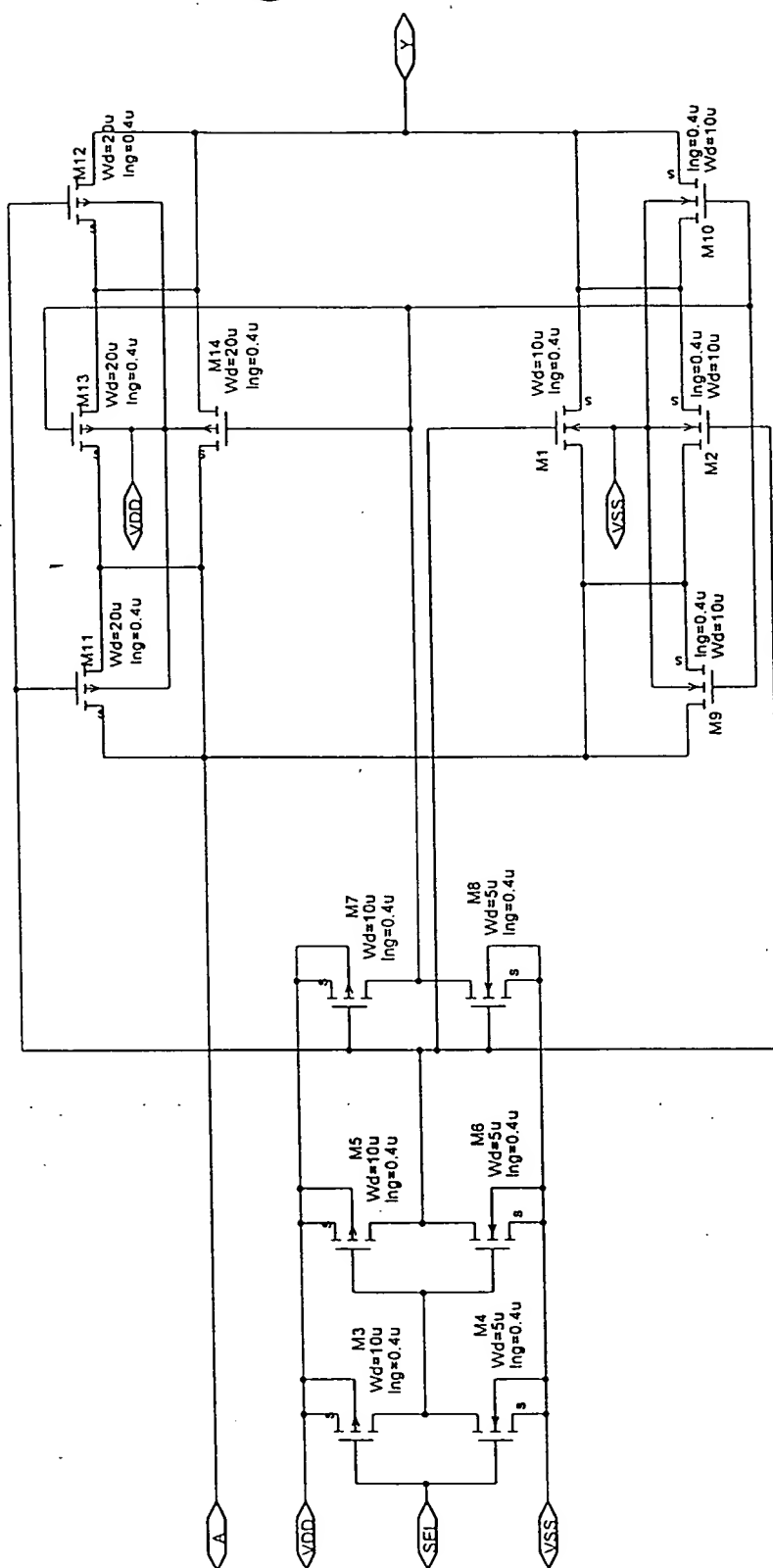


FIG. 183

Fig. 185

004033 2502950

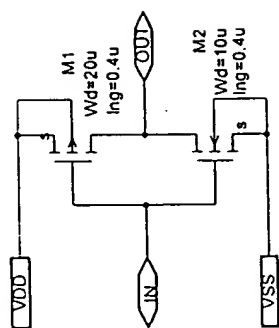


FIG. 186

FIG. 187

004000 2532530

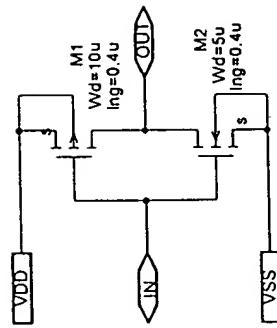


FIG. 188

004000" 46366 960

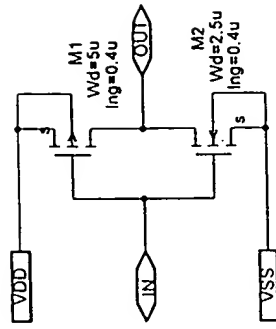


FIG. 189

004030 252250

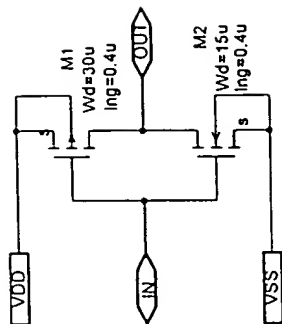


FIG. 190

004030" 2682560

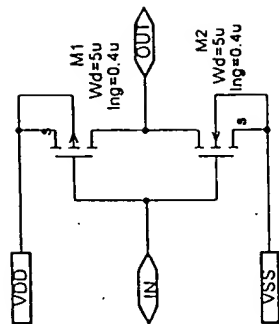


FIG. 191

004033 " 450260

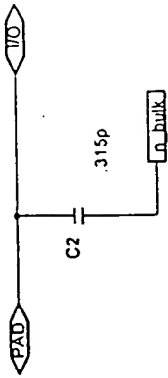


FIG. 192

004030" / 5822950

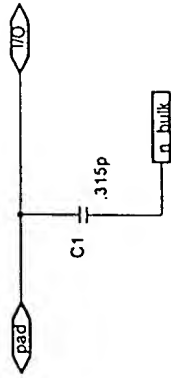


FIG. 193

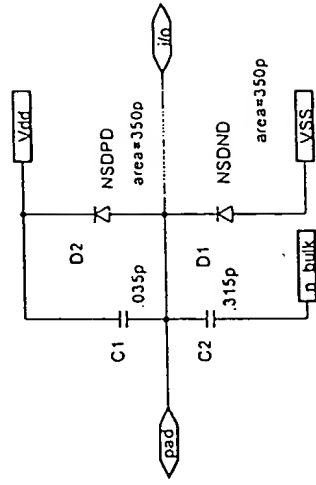


FIG. 194

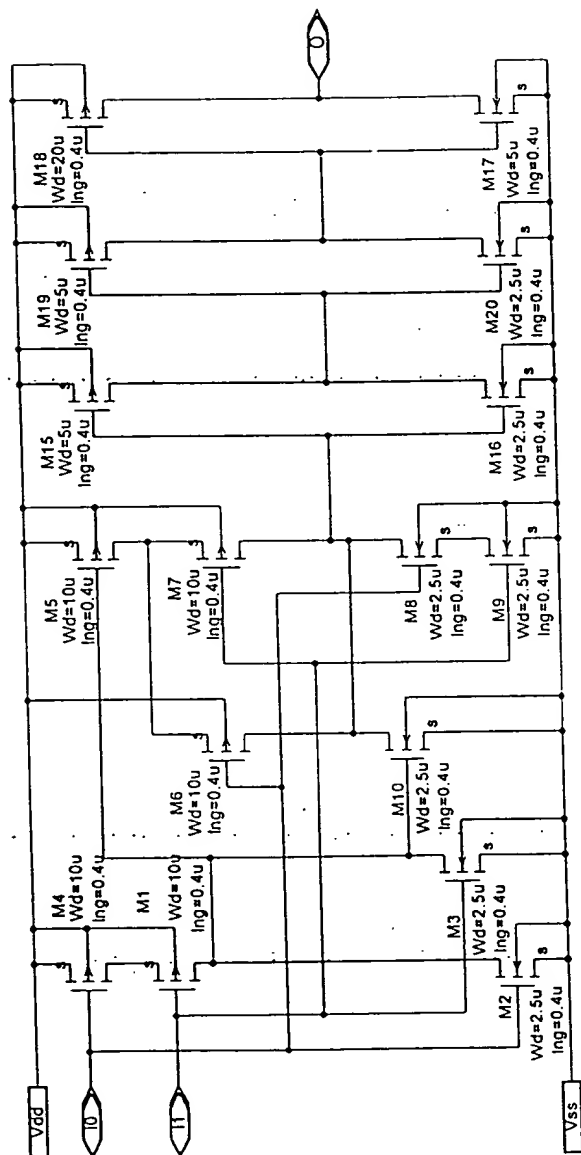


FIG. 195

5

004030 2582E260

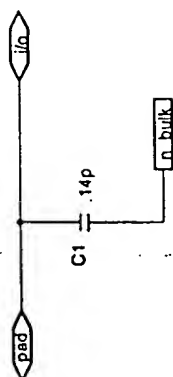


FIG. 198

004000 2582E050

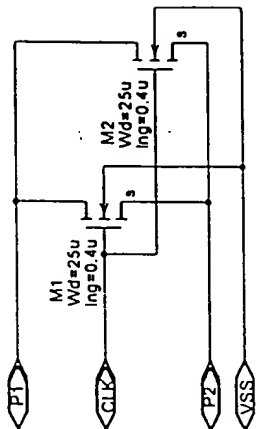


FIG. 199

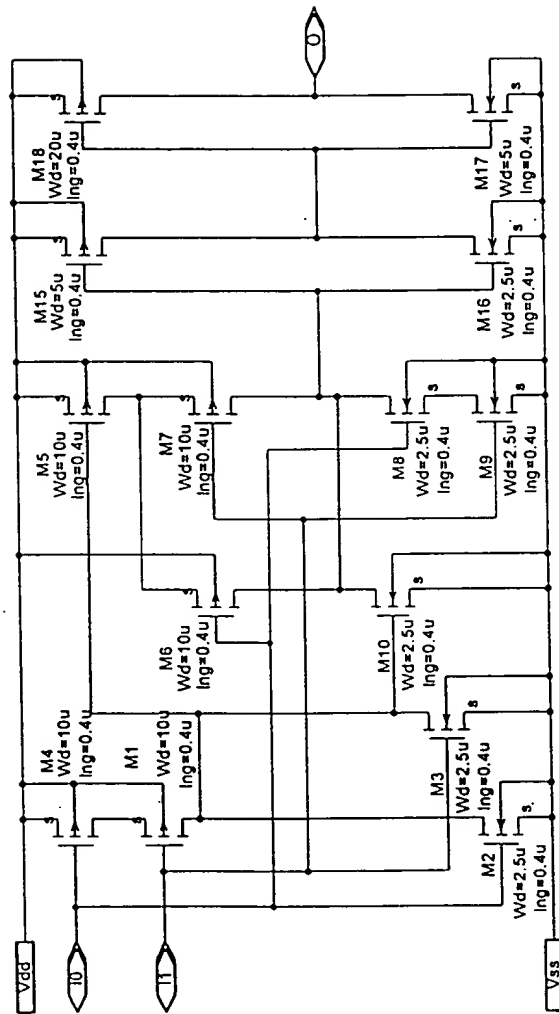


FIG. 200

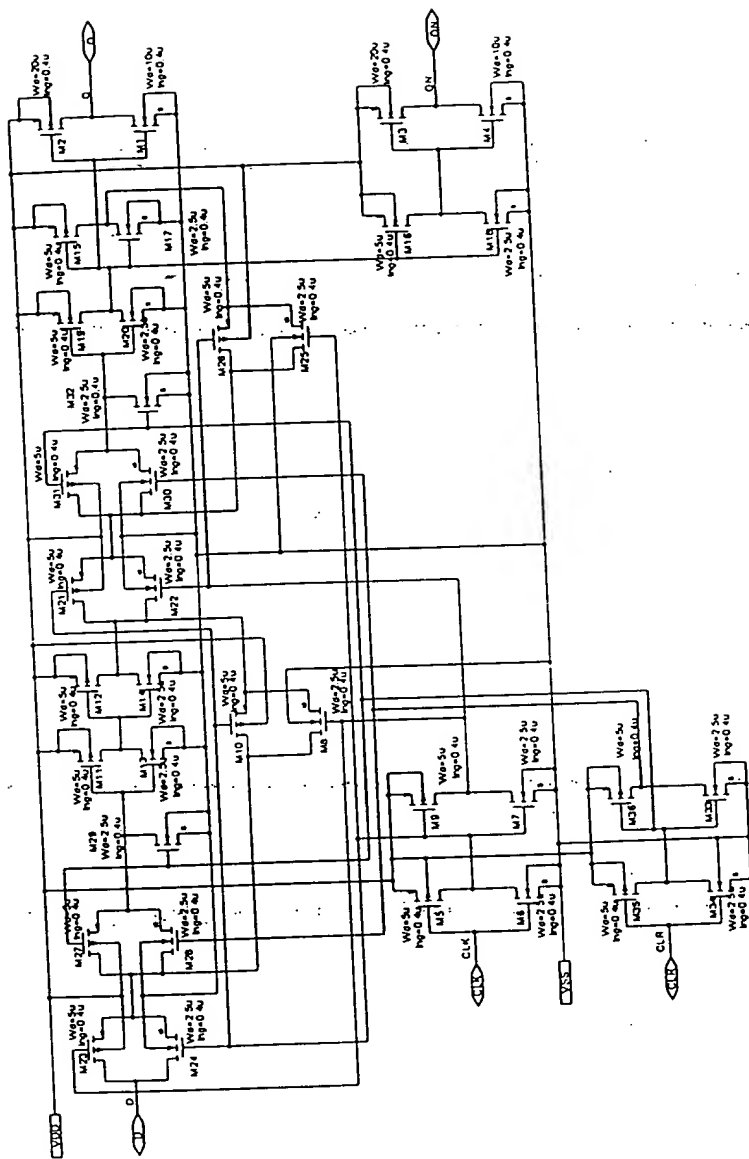


FIG. 201

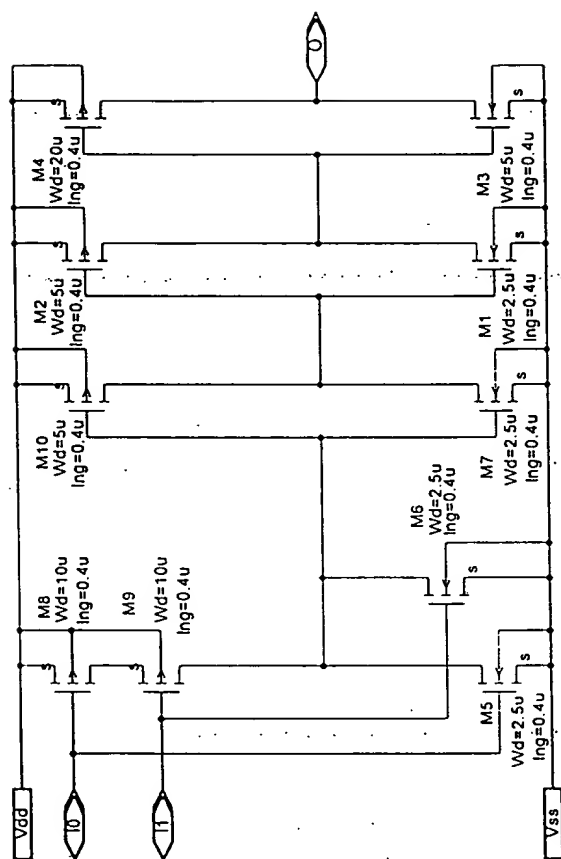


FIG. 202

204033 204033 204033

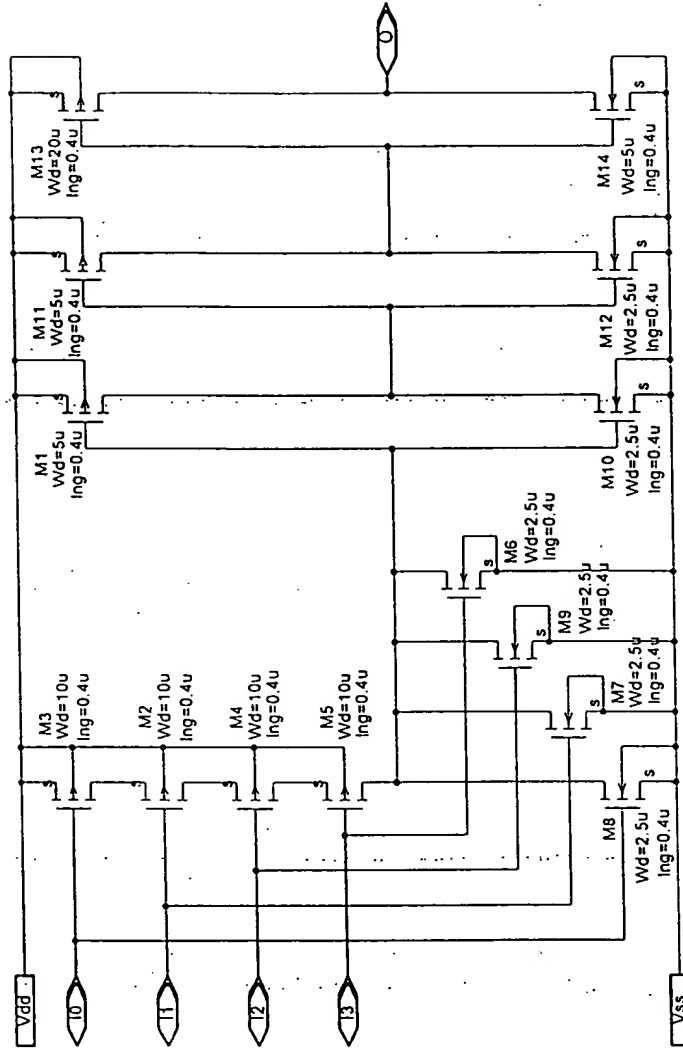


FIG. 203

1. The first of these is the fact that the
 2. of the world is not a uniform one, but
 3. of the world is not a uniform one, but
 4. of the world is not a uniform one, but
 5. of the world is not a uniform one, but
 6. of the world is not a uniform one, but
 7. of the world is not a uniform one, but
 8. of the world is not a uniform one, but
 9. of the world is not a uniform one, but
 10. of the world is not a uniform one, but

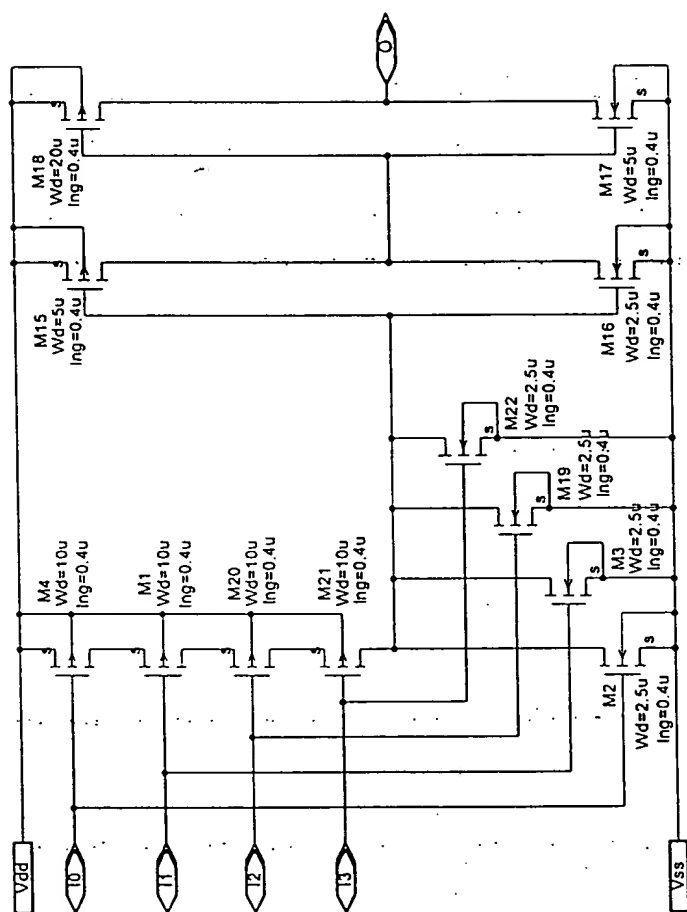


FIG. 204

[illegible]

FIG. 205

FIG. 206

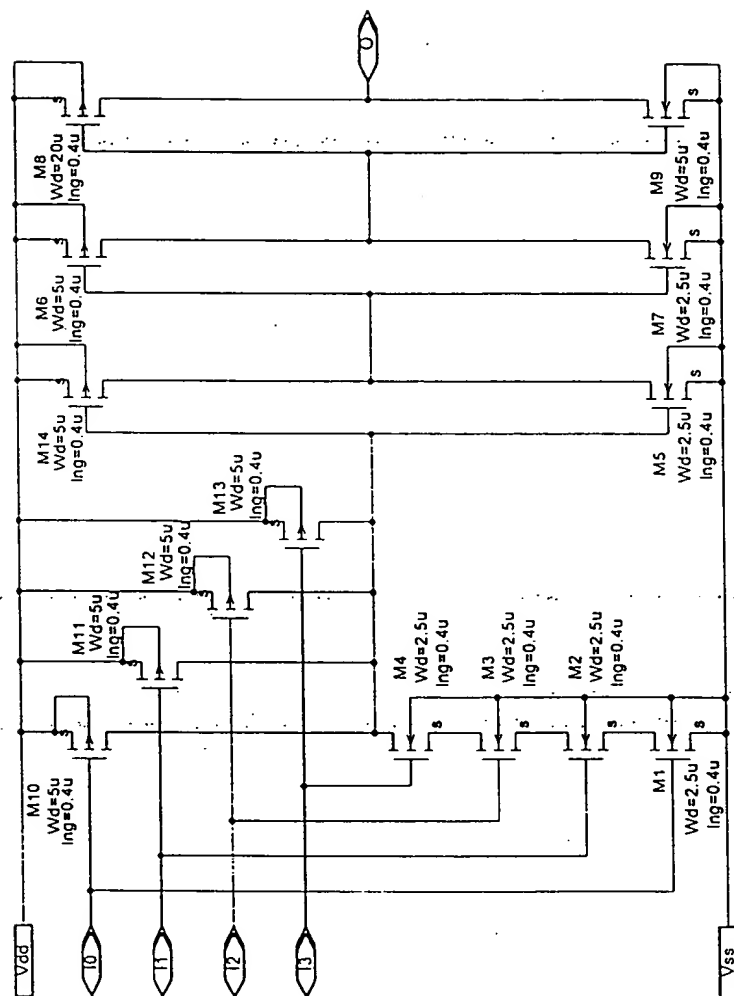


FIG. 207

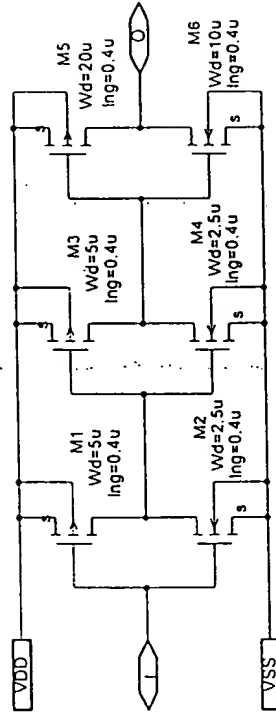


FIG. 208

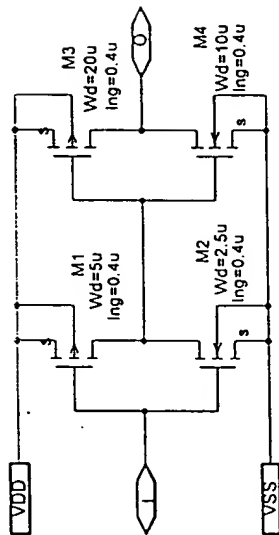
[illegible]

FIG. 209

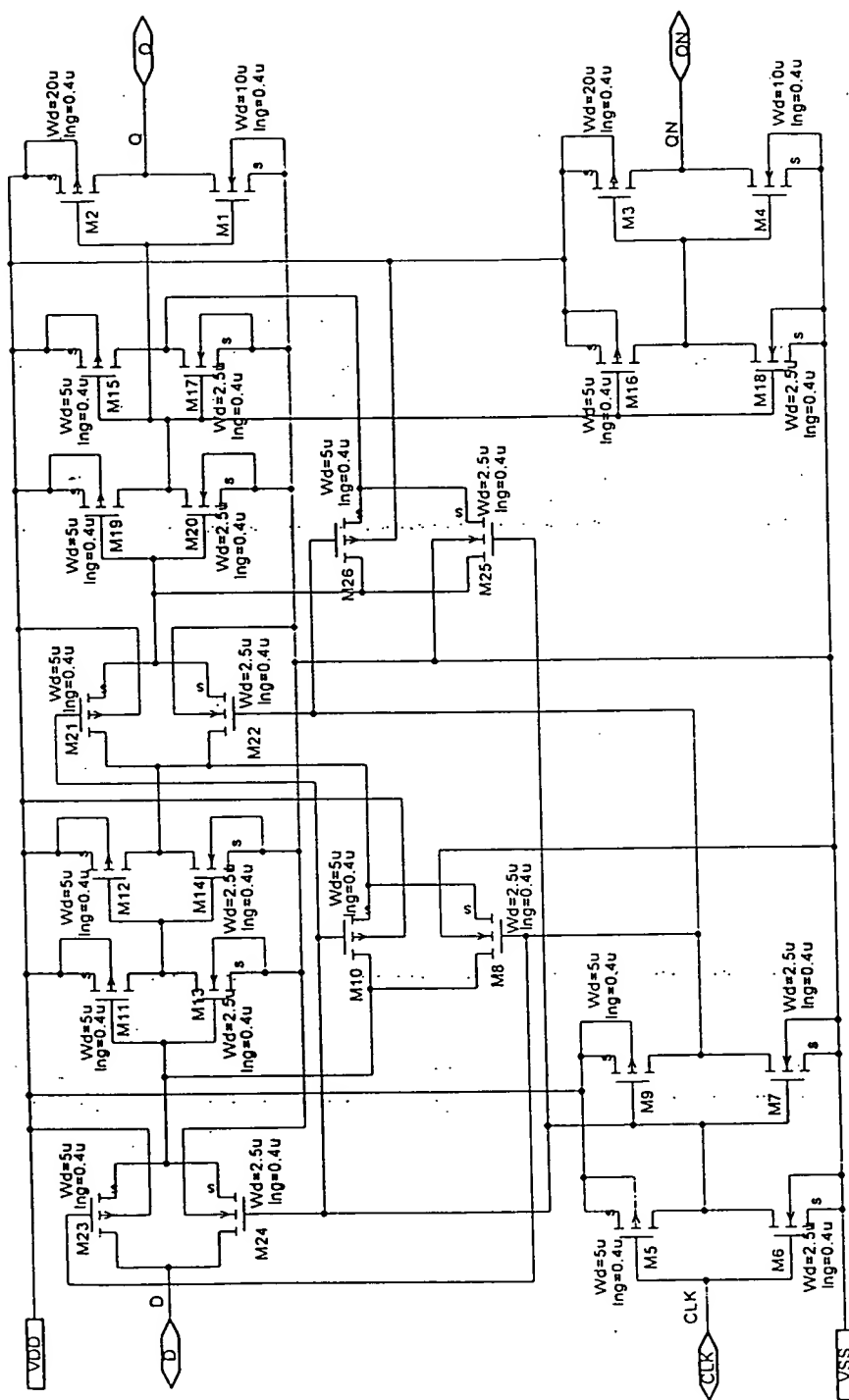


FIG. 210

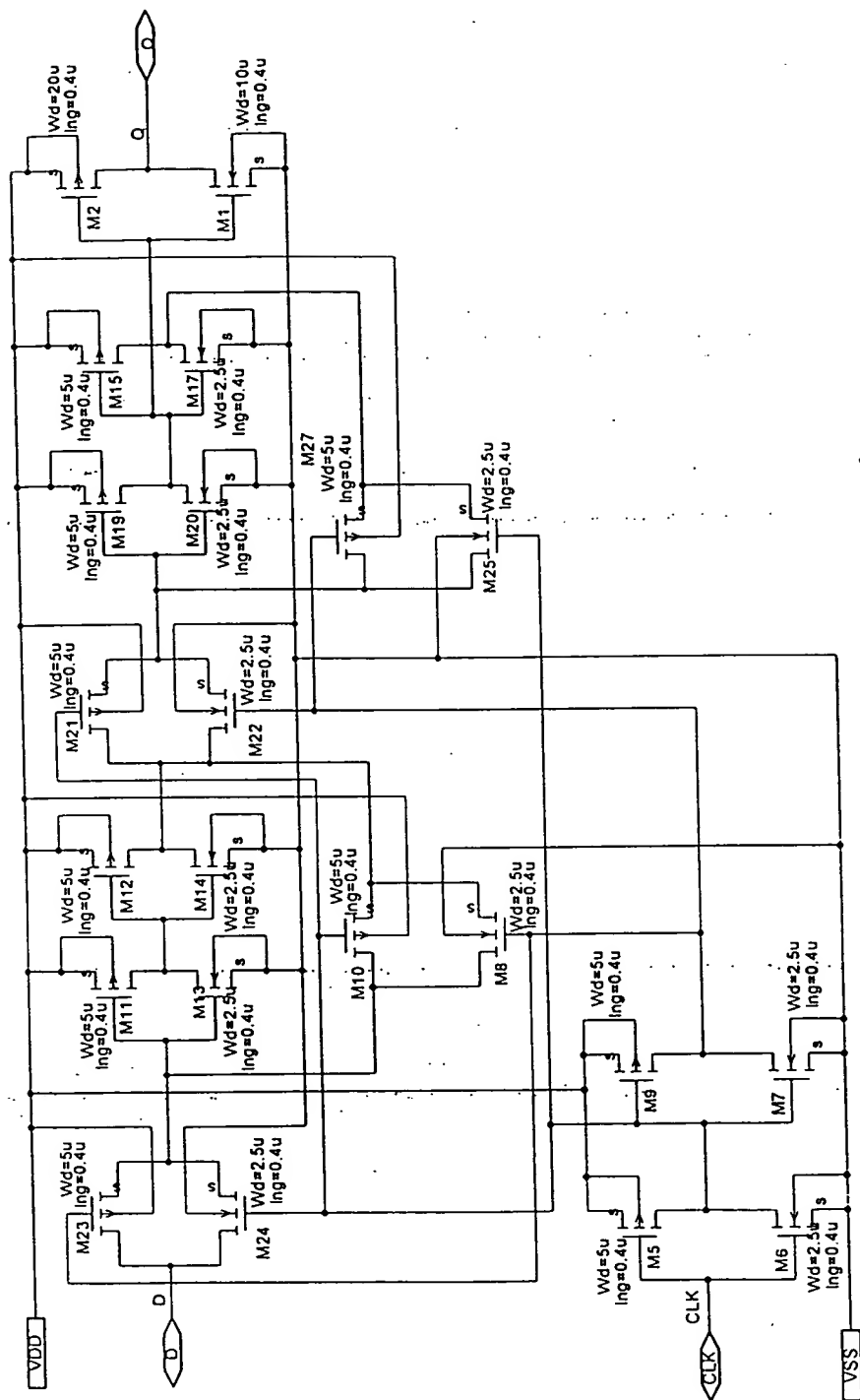


FIG. 211

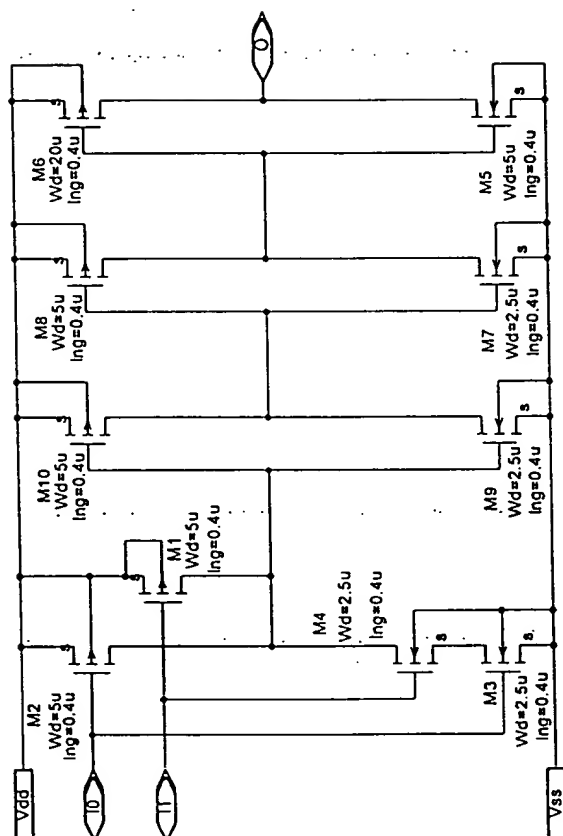
[illegible]

FIG. 212